

**YOUR  
MONEY'S WORTH**



**STUART CHASE  
AND  
F. J. SCHLINK**









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TORONTO

# YOUR MONEY'S WORTH

*A STUDY IN THE WASTE OF THE  
CONSUMER'S DOLLAR*

BY  
STUART CHASE  
AND  
F. J. SCHLINK

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1928

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## FOREWORD

The authors have tried to verify the material in this book with great care, and they have reason to hope that the errors of fact which must inevitably occur will not be numerous. In so far as errors of fact may come to light in illustrating a particular point, the authors have in their files, in nearly every instance, other cases exemplifying the same point.

Important statements of fact have been given footnote references at the end of the paragraph in which they appear. For nearly all statements of fact not covered by footnotes, exact reference is at hand, and can be produced if needed.

While a good deal of concrete information is given respecting what goods to buy, and what to avoid, this book is not a consumers' Baedeker. It is merely an argument for the handbooks which it is hoped may some day come. It is a plea for the use of available knowledge, not a reference work.

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## YOUR MONEY'S WORTH



# YOUR MONEY'S WORTH

## CHAPTER I

### ALICE IN WONDERLAND

"I can't believe that," said Alice. "Can't you?" the Queen said in a pitying tone. "Try again: draw a long breath, and shut your eyes."

WHY do you buy one make of automobile rather than another? Why do you draw up beside a filling station pump which is painted red rather than one which is painted yellow? Why do you buy the tooth paste you are using—what do you know about its relative merit compared with other tooth pastes—do you know if it has, beyond a pleasant taste, any merit at all? Have you any evidence, except blind hope, that the package of insecticide under your arm will actually rid a house of flies? Is this cake of soap really going to give you a school girl complexion? How can you tell what type of electric refrigerator is technically the best within the range of what you can afford to pay; or oil heater, or vacuum cleaner, or electric washer, or radio set? Do you know what kind of paint or varnish you ought to have for the floors, the studio walls, the picket fence, the kitchen shelves? How many washings will those shirts survive; how many ball games those stockings for Junior; how many shaves that safety razor blade? What does "solid mahogany" mean to you, and what does it mean to the furniture trade? What do you know about the ultimate effect on cells and tissues of that fat reducer?

"One who goes into the market to buy a motor car to-day is naturally confused. He has read the words *best* and *greatest* so often that they have ceased to be convincing. Where *all* is best, he reflects, there can be no best. Thousand dollar cars have been described to him in ten thousand dollar language. And vice versa. He finds himself the target in a war of adjectives; the helpless victim in a gigantic competition of words. And so he is forced to rely on chance—the advice of friends—or his own limited experience."

Thus an automobile advertiser frankly states the case of what confronts the consumer—not only in automobiles, but in household appliances, textiles, shoes, soap, tooth powder, building materials, foodstuffs—to a greater or less degree in nearly everything he buys. It confronts Park Avenue no less than the Bowery; the farmer no less than the city dweller. It affects every man, woman, and child in the country. We are all Alices in a Wonderland of conflicting claims, bright promises, fancy packages, soaring words, and almost impenetrable ignorance.

It is the purpose of this book to explore that Wonderland and perhaps to indicate a path which may lead out of it—if and when its glamor, its romance begin to fade. For it is a great mistake to suppose that modern business is exclusively a serious matter. For clerks and laborers no doubt it is serious enough, but for executives, particularly those connected with the selling end, it has many of the qualities of an exhilarating game. How to catch the buyer's interest, how to hold that interest, how to follow up and how to close, how to break down sales resistance with keener and more shattering blows than one's competitor can break it. To this end, color, laughter, tears, love, fear, envy, pity, the home, the flag, modesty, ambition—upon what string



shall not the salesman play; what emotion in the human heart shall he leave sacred; what magic shall he not weave? And we upon whom his arts are practiced, wandering in his Wonderland, we too, enjoy the game. But all of us it irks occasionally—particularly when we contemplate what it costs us; and some of us it irks continually. For those irksome moments, this book is written, in the hope that some day we will want to break a trail through to solid ground.

The blazes on that trail which the authors will indicate are in no sense revolutionary. They imply no drastic change in our system of law or of property. They are practical in the sense that they are already in use in some isolated instances. We shall plead for an extension of the principle of buying goods according to impartial scientific test, rather than according to the fanfare and trumpets of the higher salesmanship. This is all. But, as we shall see, it is enough for one book; enough perhaps for a whole shelf of books.

To be specific. For the expenditure of about a million dollars, it would be possible to take every current type of motor car made, over a standardized 10,000-mile road test under controlled conditions. (One million dollars is roughly the equivalent of Mr. Ford's output every two hours.) At the close of the experiment, the figures for each make could be published in parallel columns, without comment. Just the cold figures—so many miles per gallon of gas and oil, so many failures of one kind or another per 1,000 miles, so much braking ability from a given speed, so much accelerating capacity, so much tire wear, and so on. Would this help you in choosing your next car? Not if you were buying primarily to make an impression on the neighbors. But if you really wanted to get back of the advertising, the high-powered salesman, and the dandy little jiggers on the dash-

board, and find out what was the best car for your needs and for your money—it would help tremendously. As the motor car becomes increasingly a utility and decreasingly an emblem of swank, the help to the main body of purchasers would be untold. In the end such a list would set up standards of performing excellence, and force persistently inferior types off the market altogether. For the million-dollar outlay—in a three billion dollar a year industry—who shall say what savings in hundreds of millions would be repaid to the American people?

The great bulk of the things which we consumers buy are not reviewed by any impartial testing body. Most of them advance upon us from behind a great smoke screen of advertising. Given time enough, and trial and error enough, quality will in many cases make itself felt. But consider the waste of this trial and error method as against a permanent source to which we might turn for the results of scientific tests and the setting of impartial standards.

The United States Government has solved this problem some time since, for its own purposes, and provides a working model of how to do it, and what is to be gained from it. Each year the Government buys some \$300,000,000 of supplies and equipment—ranging all the way from thumbtacks to dredging machines; from baseballs to battleships. Nearly every kind of thing the general consumer buys, the Government at Washington buys—though in not such great variety—foodstuffs, textiles, clothing, furniture, building materials, office supplies, sporting goods, toilet articles . . . everything. But in buying much of this material, the several purchasing agents pay little attention to pretty girls on magazine covers, nor yet to super-salesmen with pants like the Prince of Wales. They pay attention to technical advice from the Bureau of Standards. Half way between Washington and Chevy Chase, these great laboratories rise.

Skilled chemists, physicists, engineers, research workers, in a hundred fields are passing continually and relentlessly upon the relative quality of the goods which the purchasing agent proposes to buy. During the last fiscal year, the Bureau made no less than 180,000 tests. For an operating cost of \$2,000,000, it is estimated that the Bureau of Standards saves the Government in the neighborhood of \$100,000,000 every year—an investment which nets fifty-fold.

Why cannot this technique be extended to aid the consumer at large as it has aided the United States Government? If it has helped to secure better and cheaper gas masks and dreadnaughts, why should it not help to secure better and cheaper boots, vacuum cleaners, breakfast foods and houses?

### *Who is a Consumer?*

The word "consumer" like the word "public" is a sort of swear word, dear to politicians and much too general to leave undefined. There are two specific classes of consumers that we have in mind. First, and most important, the *ultimate* consumer, the person who finally eats, wears, lives in, or uses up, the things which industry and agriculture have made or grown for him. This includes almost without exception every living individual in the country. There is no community in America so self-supporting economically that it does not receive products made by outside and unknown hands. Where have gasoline and sugar, Ford and International Harvester not gone? We are all ultimate consumers, and all would benefit by more knowledge of the intrinsic value of the things we buy.

Secondly, every manufacturer is a consumer of raw materials and supplies. These come in at one door while his finished product goes out at the other. It is greatly to

his advantage as a *manufacturer* (not now as an ultimate consumer) to be assured of the integrity and dependability of raw materials and supplies. If he is making motor cars, he wants to know just what kind of steel and lumber, copper and electrical supplies he is getting for the price he is willing to pay. For a new factory building, he wants to be assured of the quality and cost of brick, cement, plaster, plumbing, roofing materials, paint, what not. Indeed to every industrial manager, whether he be farmer, mine operator, manufacturer, carrier, or distributor, an impartial testing bureau providing information and advice concerning supplies would prove—and has proved—of the greatest value. A manufacturer, for instance, need no longer pay exorbitant prices for “branded” steel of mystical properties. Laboratory tests have standardized the quality of steel, slammed the door in the face of all possibility of misrepresentation, and reduced competition to the simple and clean-cut element of price at an established quality, for those who use the most advanced technique in buying.

And it is manifest that in so far as the industrial manager can secure better supplies and materials at a lower cost, the possibility of the ultimate consumer's benefiting is always potential and often actual. In public utilities for example, it always should be actual. The gain is presumably passed along.

### *Necessities and Luxuries*

It would be futile to attempt to draw an exact line between goods which may be classed as necessities and those which may be classed as luxuries. Standards change from group to group and from one area to another. Necessities on Long Island may be wanton extravagance in Arkansas. Even one item may present a pretty problem. To what degree is your automobile a necessity, and to

what degree an emblem of personal prestige—and so a luxury? And yet, one suspects, there may be a broad zone—growing very indistinct at the edges—which does mark off necessities and reasonable comforts on the one side, from the glitter of luxuries on the other, leaving in the zone itself an immense amount of industrial output which defies classification.

Certain things we buy in order that we may live and be comfortable; other things we buy to keep up with the Joneses, or happily, to surpass the Joneses. The bulk of our food, much of our clothing, the roof over our heads, health and sanitation services, public education, we must have to continue functioning as individuals and as communities. Period furniture, frocks by Poiret, Tecla pearls, Dobbs neckties, Rolls-Royces, permanent waves, twelve master's bedrooms and a built-in swimming pool, give, it is alleged, a glorious feeling, but few maintain that life depends upon them.

We are not here concerned with the use or uselessness of luxuries from the standpoint of social morality or social waste. There they are. No civilization—save perhaps that of Sparta—has got along without them. But the fact that they are most often bought not for their wearing qualities but for the lift they give the ego—and a very human lift it is—seems to place luxuries definitely outside the province of an impartial expert testing consumer's goods. The technique applies primarily to necessities—to those things which we purchase for durability, dependability, or health-giving properties, rather than to those things we purchase for the glow they give the personality; for the gloom they give the Joneses.

But even in luxury goods sound workmanship is occasionally desired and desirable. Artists could use to advantage laboratory information as to color and lasting



properties of the paints and varnishes they employ. Some of Rossetti's finest work has been forever lost to us because his paints were poor and the surface ill-prepared. One needs to know near silk from real silk, solid mahogany from veneer, the imitation from the real thing. The principle of the "sterling" mark on silver (a laboratory formula certified by a designation everywhere recognized) is perhaps capable of considerable extension in the field of luxury goods.

John Redfield, lecturer in the physics of music at Columbia, has, in this connection, some pointed things to say about the violin. (That music is a luxury will be vigorously denied by some—but violins are not, for most of us, stark necessities.) He notes various structural defects in the violin as a medium for producing sound—the weakness of its tones; its wolf tones—"notes so objectionable both in quality and volume that they would be considered inexcusable if found in the voice of a first-rate singer;" the fact that the open tones differ from the stopped ones to such an extent that the evenness of the scale is seriously impaired. He notes furthermore that the vast accumulation of doctrine about the tonal importance of the varnish on a violin is largely unadulterated rubbish. And he ends his treatise with these words: "All the defects of the violin can be remedied; but they present problems for the engineer, not the musician. Put the violin in the hands of an able engineer—one capable of designing a suspension bridge—furnish him with a moderate amount of fundamental information about sound, tell him to improve the instrument, and in a year or so he will turn out such an instrument as Stradivarius dreamed of all his life but never succeeded in building." <sup>1</sup>

Eliminating obvious luxuries, and eliminating in addition the zone in which luxuries and necessities are hopelessly



intermingled, there still remains the majority of all industrial output which falls indisputably into the class of necessities and reasonable comforts, to which the testing technique is clearly and logically applicable. It is this field which is our primary concern. All the testing bureaus in the world will not stay one determined woman from buying that perfect duck of a hat. But they *have* stayed her from buying ketchup made of rotten tomatoes, and they may yet stay her from buying dubious vacuum cleaners—and a thousand other things.

### *The mad tea party*

“We who have to bring in business, must get out before the beloved customer and shout, search, halloo, promise, concede, coax, be funny, coo, thump, seek, knock, punch, and *get* the order. . . .”

Thus a New York advertising agency announces its mission. Whatever one may think of the social effect, there is no question but that the technique is magnificent; the orders are secured; the sales curves rise.

The consumer is under mounting pressure, directed by ever increasing astuteness, to buy, buy, buy—while very few sources are offered him whereby he may use intelligent selection in his buying. Indeed, so far as may be, he must not be permitted to stop to think. It is an axiom of the higher salesmanship that his mind must be made up for him in advance. Too much thinking would halt turnover, flatten sales curves, give competitors an opening. Witness the cloud of “last call” advertising—“this extraordinary offer good for ten days only;” “the chance of a life time. . . .”

Not only is the consumer bombarded by more intensive competition within the limits of the same industry—tooth

paste against tooth paste—but during the last few years, a stupendous new kind of competition has moved down upon the market, and added untold pressure to his bewilderment. It is the competition not of companies but of industries; a battle of giants, to secure the maximum possible share of the nation's purchasing power; to block one another from invading a given field with substitute commodities. Thus the lumber men organize a trade association to push lumber sales in general as against all other commodities, and also to attack lumber substitutes in particular—bricks, cement, composition boarding, asphalt shingles—all the alternatives to lumber which the consumer might use in building a house. This new competition is so important, and, to date, so little understood, that we devote the next chapter to it. Sufficient here to note the fact that it exists, and grows stronger every day.

High pressure selling may thus proceed from individual producers, or from the embattled producers of a whole industry, linked in a trade association. It may proceed from linked distributors—chain stores for example—who have cemented understandings with producers to push the latter's brands. The currents and cross currents are literally endless; it would take all Scotland Yard to trace to source the impetus of many an advertising campaign. Does an "eat more candy" drive originate with the candy people, the sugar people, or a dental supplies association? Here is a passionate appeal in the *Literary Digest* to take your clothes to a dry cleaner. Is it paid for by the dry cleaners? Not at all. It is inspired by a leading laundry machinery company.

As turnover is the chief aim of the advertiser, a tremendous temptation is always present to adulterate goods, limit their serviceability, shorten their life, and bring the

purchaser back the sooner for another sale. The tire industry recently voiced a warning that tires were being made to last too long for healthy business. A wag has observed that the reason the dollar remains at par is that the Government does not change the model every season. When we have bought a motor car, a sewing machine, a typewriter, a calculator, capable of performing efficient service for a number of years, extraordinary efforts are subsequently made to induce us to purchase a new model long before true obsolescence has set in. Changes are made by the manufacturer—often very minor ones, often only showy ones—to force this artificial turnover. All the obloquy of being behind the times is brought to bear upon our dilemma. And there is no authority to which we may turn to advise us whether a change in model is technically in order.

While adulteration has limits in respect to customers who in the nature of things would come back for more, such a check does not apply to that vast section of metropolitan trade which does not rely on permanent customers—shoppers whose eyes are caught by a window display, and who on the law of chance, would never enter the same store again. If they are let down, their protest will never find its way back to limit the sales of adulterated goods.

William E. Humphrey of the Federal Trade Commission estimates that there are at least a thousand advertisers of fraudulent schemes now operating regularly with the aid of certain magazines and newspapers throughout the country. In one publication alone, he found no less than 50 different advertisements which he "thought it safe to designate as illegal." The annual loss to the consumer "runs into hundreds of millions of dollars."

Even assuming that adulteration and fraud were non-

existent, that all goods were sound goods, high pressure salesmanship would still be busy forcing square pegs into round holes, advocating fancy package goods when bulk goods at a tenth the price would be equally effective for the specific want to be filled; in allowing poetic interpretations of the numberless uses to which this priceless specific—this dandy little implement—may be put. Both specific and implement may be excellent for certain things, but as cure-alls and do-alls, the consumer too often finds them useless. Heaven alone knows how many bright young men in sales departments the country over are at this moment clutching their hair in an attempt to find new selling points. Trying to prove that Peachnuts is not only food for the stomach but food for the brain; that Blisterine not only eliminates body odors but eliminates dandruff; that at last you may learn how not to be unpopular at dances. (For the gentleman who dug the word halitosis out of the dictionary, the wreath of laurel and a statue in the market place.) Chewing gum, as everybody knows nowadays, is no longer just an exercise for the jaws, it is a dentifrice, a digestion stabilizer, a breath sweetener, an antiseptic. “Wrigley’s,” we are assured, “is a thrice daily routine of people of refinement.” One enterprising manufacturer of salt has listed 101 uses for this homely product. At any moment you may read an advertisement describing another use for bananas.

Consider the sheer superfluity of certain kinds of goods which this forcing of turnover entails. We are deluged with things which we do not wear, which we lose, which go out of style, which make unwelcome presents for our friends, which disappear anyhow—fountain pens, cigar lighters, cheap jewelry, patent pencils, mouth washes, key rings, mah jong sets, automobile accessories—endless jiggers and doodads and contrivances. Here the advertiser plays on

the essential monkey within us, and uses up mountains of good iron ore and countless sturdy horse power to fill—a few months later—the wagon of the junk man.

A few years ago an advertising agency sent out a circular to its clients which contained these words:

“It would be a liberal estimate to say that only 25 per cent of the business transacted in this country each day is done as the result of a ‘natural demand.’ The other 75 per cent is done as a result of salesmanship in one form or another—and it is on the 75 per cent that we make our living and you make yours.”

We doubt if any careful statistical survey would show any such gorgeous ratio as a 75 per cent artificially created demand, but we do not doubt that a staggering total of the nation’s purchasing power is so controlled, and that the percentage grows larger day by day.

The mad tea party has infinite variations. It gives us a Mothers’ Day—for the especial delight of florists, and a Fathers’ Day—to the joy of haberdashers. For all we know, the undertakers—or to sound the modern note, the morticians—are now lobbying for a Cyanide of Potassium Day, subsequent to their campaign against the heinous practice of burial at sea. The Shoe Sole Manufacturers would have us stand up more and the National Trouser Makers, sit down more!

There are the hosts of slogans with which advertisers seek to lodge their product in our memories:

Have you a little fairy in your home?

Ask the man who owns one.

Eventually, why not now?

Four out of five.



I'd walk a mile.  
Happiness in every box.  
Next to myself I like.  
Time to Re-tire.  
You just know she wears them.  
Like a shower of kisses.  
What a whale of a difference just a few cents make.  
It's off because it's out.

These slogans tell us nothing of the slightest value, but for increasing sales they have profound psychological value. They follow the law which the National Outdoor Advertising Bureau has enunciated in striking fashion:

"Cumulative Effect.

You can keep your message before 48,753,300 people  
in 352 cities for 30 days at a cost of \$89,135.80.

Illumination—*Repetition is Reputation.*

Instantaneous impression—*Repetition is Reputation.*

Color—*Repetition is Reputation.*

Size—*Repetition is Reputation.*

Economy—*Repetition is Reputation.*

Circulation—*Repetition is Reputation."*

Not quality, not value, not utility, not reasonable cost, not soundness—but *repetition*. Which is the case against competitive advertising laid as bare as it ever can be laid.

There are the endless trade names by which a usually common-place and often unpatentable product is sought to be given predominance in the consumer's sub-conscious processes; so that when he thinks of roofing he will think of "Certainteed;" of wall board he will think of "Celotex;" of soap flakes, "Lux." One recent number of one magazine reveals the following:

Celotex	Sol	Crodon
Koh-i-noor	Roc bond	Kleen-heet
B. V. D.	Dim-a-lite	Whale-Bone-It
Mobiloil	Ammo	Wardrola
Listerine	Eno	Telechron
Feen-a-mint	Nokol	Orinoka
Solvay	Sanitas	Kaltex
Bondex	Radiola	Almco
Pro-tex	Velumina	Smoothtop
Textone	Synchrophase	Bishopric
Kernerator	Adco	Pedemod
Simoniz	Rhodo-gro	Flo-ra-zo-na
Insulex	Ozite	Kolored
Ceco		

When one or two manufacturers in a single industry used this stamp-in-the-name technique as the spearpoint of a national advertising campaign, they may have profited, but when many manufacturers are doing it, their efforts cancel out as the consumer becomes increasingly confused. He can no more remember all these trade names than he can remember the provinces of Siberia. The process is on the way to a *reductio ad absurdum*. It becomes more and more difficult for the consumer to buy plain paint or chintzes or wall board or washing soda, for the haze of "exes" and "ums," "oes" and "ols" that surrounds them.

Wonderland holds "contact men"—charming college bred fellows—who circulate around among consumers lining up prospects and paving the way for the "closing men"—without the prospect's ever knowing it. At dinner, dance, weekend, and in exclusive clubs, they move, on a handsome salary, with all expenses paid, looking for a breach in the consumer's armor.

Nor is the profitable exploitation of religious feeling overlooked. We clip the following from the December, 1926 number of the *Specialty Salesman Magazine*:

"For Christmas, our luminous crucifix shines in the dark and makes a wonderful Christmas present. Our agents always clean up with this Crucifix at this time. W. G. Hannan Co., Dept. C, 2539 So. State Street, Chicago."

House to house canvassing it is alleged is increasing at the rate of 20 per cent more calls each year, while the technique of shattering the sales resistance of the housewife becomes a matter for expert psychological attention in training schools for salesmen. Mr. Sam Spaulding, editor of *How to Sell*, considers prayerfully the case for (a) allowing the salesman to know whether or not the suits, shirts, and shoes he is pushing from door to door and selling as "custom made" are really ready made, and (b) allowing the customer to know it. It appears from a questionnaire sent out to the trade that many salesmen and most customers do not now know, and furthermore that many manufacturers who answered the questionnaire felt it wiser not to have them know. Mr. Spaulding takes the stand—not without a certain heroism—that the time has come to tell both drummer and customer the truth. The unfortunate implication is, however, that up to the present time, by and large, misrepresentation is the rule.\*

Mothers are opening their doors to pleasant and refined women who imply that they come from the public school authorities to see about the children's home work. The mother is delighted, only to find that what the charming visitor is really trying to do is to sell her a book on home work. If she demurs, she is told—consider the viciousness of it—that she has not her children's best interest at heart. In another case the book agent introduces herself as representing the Mothers' Club of the school. For selling a certain musical instrument, a scouting agent is sent around



who announces that he is taking a "musical census." If he finds the home without an instrument, he tells headquarters, who send a salesman a few days later.

There is the magnificent technique of "selling the package," rather than what the package contains. Gilt paper, shiny nickel boxes, layers of glassine paper and tissue, bright colors, ribbons, fancy and costly printing, the shapes of perfume bottles—all add to the purchasing appeal and with singular efficacy detract attention from the material which lies embalmed in all this glitter. Children we are, and we love to unwrap things, and on this very human trait the astute salesman trades. Packer's tar soap used to come in a relatively plain wrapping. A change was made to a metal container which proved "a great boon to the sales department," according to *Printers Ink*.

Akin to the package technique is the practice of shining up the article itself—the use of paint, color, glass, nickel, to catch the customer's eye—and so lead him away from the question of technical soundness. One has no objection, often welcomes, a brave dress on a good article, but when the dress becomes the selling point we must be on our guard. Nowhere is the practice more prevalent than in motor cars where body lines, long and haughty hoods, dashboard contrivances, finish, and paint sell the car rather than performance of engine and running gear. Tooth brush shapes are made to look efficient when as a matter of mouth anatomy they frequently are not. The extent of the consumer's acceptance of this window dressing is shown by the fact that it was found impossible to sell a very good electrical flat iron whose top was black enamel rather than the customary nickel. Prunes are dipped in glucose to make them shiny, and so add to their market appeal. All this shining up adds to manufacturing cost, increases prices, and frequently nullifies judgment.

There is the stupendous dealing in "sucker lists," as they are known in the trade. For so many cents a name, a manufacturer may secure classified lists of authors, actors, big income taxpayers, accountants, lawyers, contributors to charity, farmers, sufferers from classified diseases, whom not?—to deluge with direct mail appeals and nicely spaced follow-ups, all laid out by the advertising expert like one of Napoleon's campaigns.

The journals devoted to business print an increasing number of articles dealing with ways and means of finding and developing markets; that is, consumers with purchasing power. The *Harvard Business Review* expands on the difference between a "fad" and a "novelty," how each may be pushed to secure maximum results. In the same number it devotes many pages, with admirable statistical tables, to the determination of the relative and absolute purchasing power of every county in every state in the Union. The basic considerations are laid down by the author as follows: "The determination of the market for a given product in a given territory appears to be wholly in the answer to these two simple questions: How many people want it, or can be made to want it? How many people are able to buy it?"

One has no quarrel with treatises of this nature. If soundly reasoned they may prove of the utmost value to manufacturers. But they serve to show the intensive manner in which the consumer's dollar is being searched out. Nor should the phrases "how many people can be made to want it," and "the psychology of the market must receive special attention," be overlooked.

Here is a soap which will bring a "new kind of cleanliness." We have a picture of the young man who uses it dancing with a charming girl. . . . "Of course she likes him better. The other fellow dances well—a fine chap, but—you know—a bit careless. To be frank, not pleasant

to dance with." What is this subduer of charming young ladies; this new kind of cleanness? A little cresol, a common and cheap disinfectant recommended by the Government for disinfecting cars, barns, and chicken yards.

Here is Listerine, with its clean taste and smell. According to the advertising it guards our throat and nasal passages, sweetens our breath, terrifies the germs of dandruff. Perhaps it does, but here is what the *Journal* of the American Medical Association, quoting Sollman, says about it in its issue of July 4, 1925 :

"Thymol, plus small quantities of boric and benzoic acid, under the name of Listerine, sells at a dollar a bottle. It is really too bad that bacteria cannot recognize a superior antiseptic as well as the nose—for, according to the bacteriologic test, as quoted by Wood, four hundred and ninety-five dollars' worth of Listerine has the antiseptic action of a cent's worth of corrosive sublimate; or fifteen dollars' worth of Listerine equals a cent's worth of carbolic acid."

Meanwhile Listerine advertising has gone through at least four successive stages. First it was promoted as a more or less general remedy. Secondly came the brilliant halitosis offensive. Thirdly came the deodorant appeal. Fourthly appeared the dandruff copy. "Listerine," says the American Medical Association in the article quoted above, "is not a deodorant but merely covers one smell with another." A true deodorant on the other hand abolishes the original smell. How much scientific evidence there is for the claim that the so-called "bottle bacillus" [used in the advertising] is the cause of dandruff, and how far Listerine is really successful in controlling dandruff, are questions on which we await with interest further official reports from the American Medical Association.

Which all goes to show what can be done with a medicinal taste and a clean spicy smell.

The American Medical Association also passes judgment on tooth brushes, tooth powders, and mouth washes. Compare the following statements from a responsible expert writing in *Hygeia* with the advertising which greets us daily. "Strictly speaking, no tooth brush can be made that will conform itself to the dental arch, both on the inside and the outside. The *smaller* the brush, however, the closer is the adaptation to the arch possible, because only a small part of the arch is brushed at one time. . . . Most tooth brushes on the market are too large for efficient brushing. The elongated tuft found at the end of some brushes does not work as efficiently as is theoretically supposed. Such a brush adapts itself poorly to brushing the teeth on the inside and does not permit proper stimulation of the gum tissue towards the tongue. The long bristles in the tuft, after they are wet, have a tendency to buckle or bend and to slide over instead of penetrating." A picture is shown of a widely advertised type of brush among others, with the caption: "Poor types of tooth brushes. These are unsuited for efficient brushing by the method described." <sup>6</sup>

Tooth powders and pastes are at the best only mechanical aids in cleaning teeth. "A dentifrice is not a therapeutic agent for diseased gum tissue. It is under no circumstances, a cure for or even a preventive of pyorrhea. The medicines and drugs incorporated in many of the popular and widely advertised dentifrices are valueless and only afford the manufacturers selling talks to get their product before the public. Laboratory experiments lead an investigator to conclude that some dentifrices are put on the market in utter ignorance of the dental and biochemical principles involved, or with intent to mislead the multitude. The dentifrice really plays a minor rôle in mouth hygiene. Even

as a cleansing agent it depends entirely on the efficiency of the brush that applies it. No surface of the tooth can be cleaned unless it is actually touched by the brush. *The dentifrice has in itself no chemical or magical power to clean.* Because dentifrices are pleasantly flavored, they make brushing the teeth a more agreeable task. Only a very small amount on the brush is necessary. If the amount of tooth paste used were cut in half and the money thus saved expended for the proper kind of tooth brushes, there would be a marked improvement in mouth conditions." <sup>5</sup>

The scientific function of a mouth wash is to eliminate the debris loosened by the brush. The best and safest mouth washes are either (1) warm water, (2) a teaspoonful of salt in a pint of water, (3) the salt solution with a little sodium bicarbonate added. *The cost of each is negligible.* "The curative power of mouth washes has been grossly overestimated. In the chronic case of pyorrhea usually seen, they are ineffective, neither checking or curing the disease." Mouth washes are advertised as great germ destroyers. Even when they contain a genuine antiseptic element, they cannot normally be held in the mouth long enough to kill the germs. Furthermore "the problem of reëstablishing health in the mouth is mechanical, not chemical or bacterial." In acute infections, like trench mouth, germicidal mouth washes can play a part under skilled direction, but for ordinary people their practical use is confined to scaring us to death. "The cool, clean feeling left by the agreeable, highly flavored and equally high priced concoctions leads the patient to think that his mouth is clean. He is really only disguising a dirty one, and in using such mouth washes he is a worthy disciple of the Oriental who uses perfumes instead of soap and water." <sup>5</sup>

The American Medical Association reports (January, 1927) that the \$117,000,000 a year cosmetic industry is



honeycombed with dangerous products. "On the average every specialist on skin diseases in the country sees two or three cases each week of skin poisoning or less serious skin irritation caused by the use of cosmetics. . . . Scores of women seeking beauty by the jar get for their money unsightly scars and permanent disfigurement. . . ." Sixty-two skin specialists report between them during 1926: 111 cases of poisoning caused by hair dyes; 137 cases of poisoning from the use of face bleaches, face creams, powders and rouges; 43 cases of poisoning caused by hair tonics. Such cosmetics often contain lead, arsenic, mercury, wood alcohol and coal tar dyes. Meanwhile from the economic side: "If a woman wishes to spend \$3.50 for a jar of beauty clay when she could get the same result—if any—by purchasing 2 cents worth of dried mud from the same drug store and mixing it herself, that is her business." And the advertiser's.

Here are numberless bottled drinking waters, taken from springs which only poets could have named. Nor do we doubt that they came from those named springs—with freight and bottling charges added. But the point is that analysis shows most city water to be equally pure, and, in certain cases, very much purer than expensive spring waters. We have been sold on "purity"—just the naked term—with no knowledge of what it means to the chemist and the bacteriologist.

Here is a handy little oil can containing 3 ounces of oil for 30 cents, and sold round the world. It is urgently recommended for everything with a squeak. Yet laboratory tests have found its action to be corrosive; its value, in bulk at wholesale about one-seventieth of what we pay for it in the little non-refillable can.

Here are gasoline improvers and carbon removers—the bottles and devices that put pep in gas. We quote from the Bureau of Standards reports:

Two so-called "gasoline improvers" and one carbon remover were tested during the past month. The carbon remover was found to contain about 98% common salt. It has been noticed that the claims for some "fuel dopes" have been modified recently to take advantage of the publicity which has been given to carbon monoxide poisoning, the advertisers claiming that these "dopes" have the property of materially reducing the amount of carbon monoxide formed.\*

As to the device for admitting air into the intake manifold:

Usually the influence of such devices in the normal operating range of the engine is comparatively slight, and in case there is any improvement in operation it is due to the additional air and not to any inherent virtue in the "economizer" through which the air is admitted. Even in those cases where the additional air results in improved operation it seems unfortunate that the public should be led to believe that this is brought about by using the "economizer." Such a conclusion tends to discredit the original equipment of the car which may be of good design and capable of excellent performance when properly adjusted.†

The Bureau of Standards recently analyzed the wood entering into furniture. It found that 9 per cent of such wood made for "very durable" furniture; 35 per cent made for "durable;" while 56 per cent was dubious or definitely "non-durable." Thus families with low incomes are buying furniture—often on the instalment plan—which by virtue of its flimsiness is in the long run the most expensive. In no industry has misrepresentation been more general and flagrant than in furniture.\*



Here is—or was—a picture of a mattress, bursting with resiliency. But the Federal Trade Commission was forced to order the Ostermoor Company (although subsequently overruled by the courts) to discontinue such pictorial representations. The picture shows an expansion of a 4-inch mattress, when opened at the end, to 35 inches or more. But when measured, the actual expansion was found to be from 3 to 6 inches.\*

Do you buy because Babe Ruth or Red Grange or the Queen of Roumania endorses a product—with full length portrait and signed testimonial? Note well the following circular from an advertising agency which gives a hint of the machinery which lies behind the copy:

“For those of your organization who require testimonials or special posing of moving picture players, operatic or theatrical stars, famous athletes, society people and other famous personalities, there is made available a new service called Famous Names, Inc., Chicago. (Branches in New York City and Hollywood, Cal.)

“The fee for the exclusive use of a star is between \$150 and \$2,500, depending upon the standing of the star and the length of time the exclusive use is desired. This fee includes the special posing and signed indorsements. The rights to use this service are sold on an exclusive basis, which means a definite protection to the advertiser against duplication in picture, names and indorsements. The rights are directly assigned to the purchaser, signed by the star, and assignment is also made by Famous Names, Inc.

“Millions are daily attracted to moving-picture theatres because of the popularity of the names and pictures of these stars. Likewise, *additional* millions

can be attracted to national advertising through the use of pictures of these stars who are familiar and popular with the buying public.

*"The picture of a famous star will always attract copy attention!"*

A large New York advertising agency received the following form letter:

November 18, 1926.

Promotion Director

Dear Sir:

The writer will be glad to consider arranging for endorsements of commodities or products of national reputation from Her Majesty, the Queen of Roumania.

Please let me know by November 21st if any of your clients are interested.

Yours very truly,

H. C. KLEMFUSS,  
*President.*

This was at the time of the visit of Her Highness to the United States.

The ultimate consumer is buried under tons of advertising matter, and shot this way and that as the sluice gates of distributive pressure open and close. In Wonderland one no longer goes out to buy as his needs arise, the market comes to him and creates needs for him. The same forces operate with only less effect on the manufacturer consumer. While he is trying to force his finished product upon the consumer, on the one side, a dozen supply houses and as many trade associations are trying to force him into buying their raw materials and supplies, on the other. Department store buying and selling provides the greatest chaos of all. And one of the saddest factors is the leveling influence of

the whole technique on the sound goods with the shoddy. If the advertising of the shoddy maker is more persuasive than that of the honest manufacturer, he gets the first order, if not the repeat. A certain roofing manufacturer accumulated large stocks hoping to secure Government orders during the War. Impartial tests found the material far below standard. Nothing daunted, the company disposed of the stocks to the public through a nation-wide advertising campaign. A large fraction of the goods the consumer buys will do the things the advertising says they will, but so long as there is a large fraction which will not, and no court of appeal, the consumer remains in Wonderland and the manufacturer of sound material remains the victim of an unjust handicap.

Wonderland indeed. A wilderness in which we consumers wander without chart or compass. We buy not for the value of the product to meet our specific needs but because the story told on every billboard, every newspaper and magazine page, every shop window, every sky sign, every other letter we receive—is a pleasing, stimulating and romantic story. It bears a Message Straight to our Hearts. But whether or not it is a fairy story we do not know save through the bitter and wasteful process of trial and error. "Repetition is Reputation."

The United States Government does not believe in fairies. It believes in the tests of the Bureau of Standards and the other federal laboratories. Are we consumers too implacably romantic to follow—for necessities if not for luxuries—that technique?

## CHAPTER II

### THE NEW COMPETITION

"Now *here*," said the Queen, "it takes all the running you can do to keep in the same place."

Look at the brown and faded sheet that bears an inventory of goods in a store handling general merchandise in, say, the town of Newburyport, Massachusetts, in the year 1800. Then look at the 1927 Sears Roebuck catalogue. Before the coming of the steam engine, each community in America supplied the bulk of its own necessities and many of its comforts as well. Food, textiles, clothing, housing, were home made or neighbor made. Adulteration, shoddiness, slack workmanship, were readily detectible. Often because of the labor burden involved, they were unthinkable. Houses were reared to stand four square down the years from seasoned timber and generously proportioned hand-forged hardware. Greatcoats were fabricated to last a generation. The penalty on flimsiness was too onerous to be tolerated.

Imported goods were few in number and for the staples like molasses, spices, sugar, coffee, weapons—roughly standardized as to quality. Yankee peddlers might go a-selling wooden nutmegs in the West; "let the buyer beware" might be the rule of trade, but by and large the housewife was a canny purchaser, for the things she bought were few, and she had the standards of her own competent cottage industry to judge them by.

Then came the industrial revolution. Home made gave

way to mill made, and mill made gave way to mass production—scores of mills contributing to one assembly point. The old self-sustaining community collapsed. Standards of home and neighbor workmanship collapsed. More and more people began to buy strange goods made by unknown hands; and as the railroads and waterways developed, to buy them from greater and greater distances. With the manufacturer shipping his goods into the void, and the consumer buying the product of heaven knows whom, a thousand miles away, the old intimate contact between maker and consumer was lost; the whole system for judging sound values went into decay. Trial and error alone remained, and a bitter price had to be paid in weeding out the cheap and nasty from the sound and durable. Then and there the consumer entered Wonderland—where he is wandering yet. True, there were gains in increased output, in the lowering of labor hours per unit of product, in greater variety, in a tendency towards stable prices, that perhaps more than compensated for the losses due to adulteration, debasement and ugliness. But the net gain was only a tithe of what it might have been could the consumer have had new standards to aid his selection, in the place of the old standards which had evaporated in the steam of the mill engine.

As the mills, factories, railroads, coal mines, power facilities increased—ever faster than the relative increase in population—a new and extraordinary problem presented itself. The financial structure being what it is, it became more and more difficult for the ultimate consumer to buy back the capacity output of the new mills and factories. Manufacturers found themselves with more machines, more space, than they could utilize. In times of business depression, perhaps half of all industrial capacity would be idle. Even in times of prosperity an enormous amount would not

be utilized. Under the stress of competition, that amount tended to increase. Plenty of machines, plenty of plant space, plenty of raw materials, plenty of willing workers, plenty of consumers bursting with wants, but the purchasing power in terms of money simply was not there. We note the fact only; the wherefore of it is another story.

The amazing growth in the technical arts has provided the machines and the organization for turning out goods in incredible quantities. One cotton mill operative is now able to handle more looms than 50 operatives could manage in 1870. One garment worker running 6 rib-cutting machines, replaces 25 hand workers. Two men with an electro-magnet can unload as much pig iron as 128 men could formerly dispose of. One bottle-making machine operator replaces 54 hand workers; one cigarette machine tender replaces 100 hand rollers.

Purchasing power for consumers' goods has lagged behind capital extensions. With plant facilities greater than the call for plant products, business men have faced an ugly problem. Idle plant is bad for business. It increases overhead expenses. Depreciation, upkeep, repairs, taxes, insurance, continue whether the plant is used or not. Overhead on these new machines is very heavy. Workers can be discharged when business slackens, but excess plant cannot be discharged. There it stands eating its head off in overhead. Money economy being unchanged from a simpler age, there it will continue to stand, sometimes more of it, sometimes less of it, according to the curve of depression and prosperity.

No individual corporation, no individual business man, however, is prepared to face the larger social aspects of this situation. The individual argues that even if some plant space must always be idle due to the failure of purchasing power, why should it be *his* plant. It is *his*



duty, according to all the traditions of business enterprise, to let the other fellow worry about overhead costs. *He* must beat the other fellow to the market, boost his own sales, keep his own overhead down. With the majority of business men all following the same line of reasoning, it follows that competition becomes intensified. Dramatically intensified. And thus selling becomes increasingly more important than producing. Production can be guided by reliable engineers at \$3,500 a year, but the art of breaking down sales resistance, of securing first call on that strangely limited national purchasing power, requires driving go-getters at \$25,000 a year—\$50,000—anything, provided they get the orders.

So the best mental effort in the game of business is concentrated on the major problem of securing the consumer's dollar before the other fellow gets it, and particularly before the limits of purchasing power are reached, and plants have to close down because there are no more dollars to be got at all. . . . The fruits of that urging are national advertising, experts in sales psychology, high pressure closing men, trade association drives, vertical trusts, instalment selling, direct mail appeals, sucker lists, "contact men," the "dumping" of goods in foreign markets, heaven knows what—and a very perplexed consumer. Even the trust, as we shall see, while it may check competition in its own line of business, is forced to compete with other industries for a share of the national purchasing power.

This is necessarily a condensed and oversimplified statement of economic causes. We follow the newer school of economists who are increasingly dubious as to the social virtues of thrift. But whether it be over-saving or under-consumption, the fact of the economic paradox is there for all to see. With a capacity to produce perhaps twice the present total of consumption goods, unemployment lingers,



poverty remains, two-thirds of all American families live below the budget of health and decency as computed by the United States Department of Labor. It is the fact that concerns us here. Our money system is based on the economics of scarcity, while our technological plant is built on the economics of abundance. The two systems fail to interlock, and out of their frantic and largely futile attempts to do so, the new competition emerges.

### *The five channels*

Competition, old style, took place between individual businesses in the same horizontal plane along the line of the industrial flow from natural resource to ultimate consumer. Coal mine competed with coal mine, railroad with railroad, soap manufacturer with soap manufacturer, wholesale grocer with wholesale grocer, retail drug store with retail drug store. Now all is changing. These horizontal lines are being disrupted in a hundred places. Competition between dealers in the same business continues, of course, even intensifies in some directions, but to this ancient warfare have been added new and turbulent elements. Mr. O. H. Cheney, vice-president of the Pacific National Bank, New York, has recognized five distinct channels through which the new competition functions:

(1) The growth of competition across horizontal lines; vertical competition.

(2) The competition of one industry organized through a trade association, with another industry similarly organized, selling an alternative or substitute commodity. Lumber against bricks, for instance.

(3) The competition of one industry with all other industries for as much as it can get of the national income.

(4) The competition of one community with another. Town boosting; Florida versus California.

(5) The growth in intensity of international competition.<sup>1</sup>

### *Vertical competition*

Manufacturers are competing more and more with wholesalers by selling direct to the retailer; they compete with the retailer by selling direct to the consumer. Retailers compete with wholesalers by organizing buying associations, and with manufacturers bent on direct selling through the mails, by the "patronize your neighborhood store" campaign. Wholesalers compete with retailers by organizing chain stores. Chain stores and wholesalers compete with manufacturers by organizing their own manufacturing plants.

Going a step further back toward the source of raw materials, dairymen compete with milk companies by forming their own distribution units; raisin growers, fruit growers and tobacco growers compete with old-line jobbers and wholesalers by organizing producers' coöperatives with up-to-date marketing departments, promoting trade names, labels, fancy packing and national advertising.

In this uproar distributors may find themselves with excess capacity, thus creating a "merchandising vacuum," which results in a clamor for more goods at a faster turnover. The stream turns and runs uphill. The pulling force to attract goods, quickly leads the manufacturer back to his sources of raw material and supplies. He wants to control them; he does control them. And out of the competitive welter comes what is beginning to be termed the "vertical trust"; the concern that owns the entire chain of processes from the gathering of the raw material, through the manufacturing and assembling stages, straight down to

the distribution and sale of the finished product. Ford has developed such an organization.

### *Alternative Commodities*

You are tired of paying rent and want to make yourself even more tired by building a house. The Lumber Manufacturers move down on you, closely followed by the Brick Institute, while the Cement and Stucco Fraternity lands in an airplane. Your roof develops into an intensive struggle between the embattled National Slate, Red Shingle, Sewer Pipe Tile, Sun-kissed Kopper, and Tar Associations. If you do not like these fanciful names here are some real ones:

The National Pickle-Packers Association

National Selected Morticians

American Shovel Institute

Minced Razor Clam Packers' Association

National Peanut Cleaners' and Shellers' Association

Men's Belt Association

Rim Manufacturers' Club

United Petticoat League of America

Whoever heard of a lumber dealer doing anything else but defame another lumber dealer? Now they embrace one another, and form a trade association with a vast publicity fund to make the American people buy more lumber and beware of lumber substitutes, of which there are 28 listed. The cotton men fight the wool men, and the silk men fight both. Oil, coal and gas are battling for the privilege of heating the country. Wood and sheet steel are at grips in the office furniture field. Trade associations were largely unthinkable under the old competition, but today distributive pressure has become strong enough to heal the

ancient feuds to the point at least of getting together and attacking the group with an alternative commodity to sell.

Mr. William A. Babbitt of the Lumber Manufacturers' National Committee on Wood Utilization, has shown the fear of substitution in a recent call to arms:

... Out of the experiences of the past decade there has developed a fairly adequate conception of the critical importance both to lumbermen and fabricators of wood products in the colossal economic struggle of wood to maintain its position in the fields, where, until yesterday, it had held age-long supremacy. Now on every flank the assault is launched on lumber and the industries which it sustains. . . . An ever increasing flood of substitutes is pouring into markets which wood has long and rightfully dominated since the dawn of civilization. Most of these substitutes are unproven novelties. . . . Their strategy is to rely on the inertia of the wood industries, and advertise with the most admirable skill. . . .

### *The struggle for purchasing power*

Inter-industrial competition is the most recent of the new forces, and in the opinion of Mr. Cheney, the most important. It is the competition of an industry for all it can get of the national income. This is not lumber against bricks, but lumber against every other industry in the country. Hence great war chests to make the consumer lumber-conscious, shoe-conscious, straw-hat-conscious, silk-shirt-conscious, solid-mahogany-conscious, personality-perfume-conscious, balloon-tire-conscious, anything-conscious—before his bank account becomes unconscious.

Would you hear one of the most poignant romances of

modern commerce? Then read the true story of how the National Kraut Packers' Association, assessing themselves 50 cents per ton of cabbage, has made America sauerkraut-conscious in four short years, redeeming the odium on one of God's Gifts to Mankind, and increasing consumption 20 per cent. Read how the American Face Brick Association has increased production 250 per cent since 1920; how the Wood Wheel Manufacturers killed the demand for wire and disc wheels; how the Greeting Card Association increased sales from \$10,000,000 in 1913, to \$60,000,000 in 1925; how the Joint Coffee Trade Committee has pried 4 pounds per annum of additional coffee into the great American coffee pot; how the Sun-Maid Raisin Growers have seduced threefold more purchasing power in their direction. And last but not least, how the California Walnut Growers' Association has installed 125 specially designed and most ingenious machines for stamping their special brand in printer's ink on each and every walnut which the Association packs!

If you cannot sell the consumer on this year's wages, take a mortgage on next year's wages—and lo! the sky is black with instalment contracts. It is estimated that over \$5,000,000,000 of 1926 purchasing power was mortgaged in 1925. Automobiles, radios, washing machines, parlor suites, diamond rings, books, even suits of clothes—on the dollar down basis.

The flour millers have launched an "eat more bread" campaign. Their goal is 220 pounds per capita per annum. Not to be outdone, the meat packers implore us to "eat more meat." Their goal is 179 pounds per capita per annum. The milk men are organized to secure one quart per capita per diem; the butter men are bending their energies to have us equal the Australian average, which is 10 pounds a year more than the American average; the



cheese makers set their goal at the Swiss level, 22 pounds above the United States consumption.

A recent summary of trade association activities (October 1926) reports 69 industries actively engaged in cooperative advertising, with 9 more industries about to enter the field. Lumber manufacturers have raised \$4,000,000 for a 5-year program. Undertakers are getting ready to sell more expensive coffins through national advertising. This summary carries a picture of the consumer's dollar, with 78 arrows directed at its circumference representing the 78 industries already organized to compete for it. "We can either make our brand grow or create more room for our brand to grow in."

During 1927 the General Motors Corporation according to one of its officials will spend "well in excess of \$20,000,000—probably nearer \$30,000,000" in advertising. (This sum would hire nearly half the members of the American Society of Mechanical Engineers. . . . Which type of outlay would advance the industry the more?) On the Frigidaire refrigerator, the General Motors plans to spend \$5,000,000 in advertising in 1927; on the Chevrolet car, \$11,000,000. *Printers Ink* reports that upwards of \$10,000,000 will be spent advertising electric refrigerators in 1927 by the 125 organizations in the field. Ice cream manufacturers have started an "educational" program assessing themselves one-third of a cent per gallon to pay for the advertising (October, 1926).

Retail clothiers are informed by one of their leaders that they must be prepared to spend 6 per cent of their receipts for advertising, roughly \$100,000,000. "The retail clothier spending 6 per cent of his gross revenue is not advertising in competition with other clothiers; he is advertising in competition with the man who sells diamonds for a dollar a week, with the restaurant, the cigarette manu-

facturer, the automobile, correspondence school, and savings bank. He realizes that he is but one of a thousand competitors who are scheming, striving, clamoring for every dollar in circulation and for some that are not."<sup>2</sup>

The shoe industry is to spend \$1,500,000 in a 3-year campaign, in an effort to bring the number of shoes per capita back to the 1914 basis. There has been a decrease of 28,000,000 pairs a year in shoes purchased (doubtless due to money diverted to automobiles, radios and other well advertised commodities), and the shoe manufacturers are going to assault the market and try to restore the old level. Red cedar shingle manufacturers on the Coast have started a drive for a \$300,000 advertising war chest.

Meanwhile the New York World commenting on the hard times due to overproduction in the diamond industry, and the wholesale dumping of crown jewels on the market since the war, sagely advocates that the diamond merchants foregather and finance a "get-engaged-oftener" campaign!

### *Booming communities*

The new competition has jumped the bounds of separate industries and now involves entire communities. A few years ago a town was a town. Now it is the "livest little burg in the State"; the "fourth largest producer of suspender buttons in the country"; the "home of the Hemingway Potato Peeler." Signs greet the motorist as he enters the town and wish him farewell as he leaves, asking him to call again. Deadly rivalries develop between one community and its neighbor. Cases of infectious diseases and factory accidents are taboo in the local newspapers. Statistics of the increase in population are as optimistic as they are unreliable. Nor is this competition confined to towns. States and whole regions pursue it actively with great chests for publicity. Florida does battle with California; North



Carolina asserts its difference from its neighbors; New England contends that its ancient prestige is by no means lost.

Out of the confusion have come concrete economic results. Population has actually shifted. Certain communities, together with their land values, go suddenly uphill. Others decline. Local trade booms and collapses. Local merchants go to Europe or go into bankruptcy.

### *International competition*

When the Standard Oil Company entered China, it gave away kerosene lamps to every native who would take one, thus giving the coolie no excuse for not buying kerosene. With the growth of mass production and unused plant capacity in all industrial countries, manufacturers have struggled to keep overhead down by selling goods abroad; sometimes "dumping" them at prices far below domestic levels. Thus the purchasing power of the consumer of the world is competed for, and many are the potential wars which lie in that competition. But this channel, interesting as it may be in itself, is beyond our immediate problem.

Mr. Jesse R. Sprague writing in *Harpers Magazine* gives us a graphic picture of the changed economic situation. "Big Business" he defines as "any combination of capital and talent designed to produce and sell in large quantities and more economically than is possible under a system of small enterprises." Theoretically Big Business should enormously cheapen the cost of living. In fact it has done nothing of the kind—with a few outstanding exceptions. In spite of mass production, fixed prices, wide distribution, the general price level considered in decades moves steadily upward. Why is this? Because, Mr. Sprague holds, of the losses due to delegated authority, to the ever mounting bur-

den of selling costs, and to the pressure of stockholders—who know nothing about the business—for dividends. He gives us a hypothetical case which is at once so vivid and so true to type for a large section of modern business that it is worth quoting:

“There is, let us say, a manufacturer of brass door knockers who has established a local reputation for beauty and excellence of product and who turns out twenty door knockers per day. These cost him one dollar each to manufacture, and he sells them for two dollars. On this basis he makes a satisfactory living as he employs only a couple of assistants, and his selling expenses are practically nothing because people come voluntarily to his workshop and buy his product.

“The time arrives when this manufacturer wishes to retire. The live business men of his community form a corporation to take over his enterprise and sell stock to several hundred people as an investment. It is decided to erect an immense factory building, to install automatic machinery, and to increase the output of door knockers to ten thousand per day. By manufacturing in such quantities each door knocker will cost only fifty cents instead of one dollar as formerly.

“On paper the project appears thoroughly sound and it seems the stockholders must receive large returns on the money they have invested. But in order to dispose of ten thousand door knockers per day it is necessary to form a country-wide selling organization. The stockholders elect as president a gentleman who has no financial interest in the corporation but who is reputed to be a go-getter and a salesman of surpassing attainments. After a careful survey of the business situation this gentleman reports to his stockholders that sales resistance is very pronounced

in the door-knocker field and that an energetic campaign will be necessary to sway public taste—to make people, as he expresses it, ‘door-knocker conscious.’ The stockholders, interested only in receiving dividends on their investments, inform the president that any plans he makes will be satisfactory to them so long as he earns profits.

“Fortified by this expression of confidence, the president embarks upon a campaign of the utmost vigor. In a dozen principal cities he establishes offices, each in charge of a branch manager chosen for his ability to overcome sales resistance, and each held responsible for a certain volume of sales in his territory. Above these branch managers is a general sales manager who darts constantly from one office to another to urge greater activity, to commend, to threaten, to devise ingenious methods of salesmanship. From the factory is sent out a corps of skilled demonstrators to visit retail stores where the door knockers are sold and to stress the importance of door knockers on the stores’ customers. The stores are authorized to sell door knockers on the installment plan. Lecturers are sent to address women’s clubs throughout the country to spread the gospel of more and better door knockers as a means of elevating the standards of American culture. As a crowning gesture of his campaign the corporation president announces National Door-knocker Week and calls upon right thinking citizens to place in abeyance all ordinary matters that the Week may properly be observed.

“By such methods the door-knocker corporation manages to dispose of its output of ten thousand per day, but at enormous cost. In order to pay dividends, the price of its door knockers is advanced to four dollars. But at this price the sales resistance becomes more pronounced than ever, and still more expensive selling activities are necessary in order to dispose of the factory output. Then it is that

little business begins to cut into Big Business. Small factories are started in various communities whose owners cater only to local demand and who can vend their door knockers at the old price of two dollars each, a figure that the great corporation cannot duplicate. Eventually this competition grows to the point where the corporation, committed to a policy of mass production and high-powered selling, goes bankrupt. Its stockholders lose not only their promised dividends but their capital as well.

"Even the tyro in business can see why a Big Business enterprise so conducted should have failed. There was not a natural demand for ten thousand door knockers per day. It was possible by go-getter tactics to force such a number on the public, but such a pace could be maintained only by a too extravagant outlay. When the time was ripe little business simply stepped back into the place from which it had been evicted." \*

In the face of the new competition, utterly unorganized, with no defense except a waning quality of common sense, the ultimate consumer makes his blundering way; a moth about a candle. To talk of his bargaining power is to talk of a non-alcoholic America. There is no such thing. He can break a business, but only when a rival stimulates him into breaking it. He can turn from one brand to another, but only when advertising forces him to turn. The machine age has become too much for him; he is sunk in an indiscriminate sea of door knockers and other things; he grabs as the strings are pulled, but too often he grabs only to find sand and ashes in his hand.

Nor is it a bed of roses for the gentlemen who pull the strings. For every campaign "that goes over big," probably a dozen peter out and die. One man goes to Palm Beach and the rest go into insolvency and so back to the high

stool. The consumer's mind is so undermined, he snatches at so many baubles, that anything may happen.

A certain textile mill tries to keep abreast of fashion with a designer in Paris, another one in London, a design department in New York, and one at the mill. It makes up in 100-yard samples, over 50 patterns a year in high grade mixed fabrics. Yet the mill considers itself fortunate if 12 of these patterns prove saleable. In the women's ready-to-wear dress trade, the vogue of a given pattern is between 30 and 60 days.

One who would bring order out of this chaos has temerity indeed. There are moments when the massed weight of its complexity bids fair to overwhelm any plea for intelligent buying altogether. But there stands the Bureau of Standards, a beacon on a hill.

The authors of this book have no quarrel with the technique of advertising as such. It is a magnificent technique. Sanely applied it could remake the world. Think of what might be done with applied psychology in a great publicity drive for public health, for better housing, for cleaning up the slums, for honest and timely information about goods, for genuine education in a hundred fields! Many advertisers see this; a few of them try to practice it, but their hands are tied. Between the interest of the whole community in more abundant life, and of the individual in his profit and loss account, there yawns a chasm, which no optimism, no sophistries about "service," no bright little talks by Dr. Frank Crane and his friends, may cross. And when the technique of advertising is arrayed on the side of the private balance sheet, may the Lord have mercy on the consumer's soul, for there is no mercy in the world of dollars and cents. It is his purchasing power, not his welfare, which has first consideration with these forces strug-



gling in the turmoil of the new competition. If he is ever to find adequate protection he must reach out and take it for himself.

In a reasonable world, it would be a kindergarten principle that a thing good for the ultimate consumer is good for industry; that the test of business success is the excellence and serviceability of its product. This principle has operated from time to time over large sections of western civilization. Millions have been won from it—Waltham watches, Sheffield Plate, English woolens, Singer Sewing Machines, Ford tractors—and they are not millions to be seriously grudged. It still operates in certain fields. But what protection has an honest manufacturer against the higher salesmanship in the hands of an unscrupulous rival? How many honest manufacturers have gone cascading to eternity because their goods were better than their sales appeal? It is not quality but salesmanship which makes or breaks a business man to-day—except when he is dealing in the most primal necessities, and even then he is not always out of danger.

If and when the consumer arms for his own protection, the vicious circle may perhaps be broken, and the manufacturer of sound goods restored to the place which the higher salesmanship has so often wrung from him. Let Mr. W. T. Grant, president of one of the great chain store organizations end the chapter for us:

“Fads and fancies which are jammed down the throats of consumers by hollow-bottomed advertising are not a sound basis for financial success. The process has created in the United States an over-duplication of items which clogs up the market and wastes billions yearly. . . . The same product by another name is one



way of harassing the public. Competing companies have a way of splitting hairs as to qualities of their merchandise with the result that they become so concerned about methods of 'putting it over' that they forget the first duty to the customer."

## CHAPTER III

### ALONG MAIN STREET

I suppose I ought to eat or drink something or other; but the great question is, what?

WALK into a modern drug store and look around you. This is one of the nerve centers of up-to-date merchandising. Here the consumer meets the products of a thousand manufacturers. Gone the narrow functions of the old time apothecary. Long shelves of patent medicines, each in its bright container. A department of toilet preparations—soaps, face powders, rouge, hair washes, tooth brushes, tooth powders, pastes and creams, shaving preparations, manicure sets. The resplendent soda fountain. Cigars, tobacco, and colorful stacks of cigarettes. A candy corner, with wrapped Saturday Specials, monogrammed five pounders, and a sort of war game map of five-cent hummocks and humps in gold and silver foil. A stationery section. A seventy-five cent novel shelf; a circulating library. Fountain pens, jack knives, scissors, toasters, cameras, clocks, thermometers, sick-room supplies. . . . and somewhere in the back, pretty hard to find, the prescription counter with perhaps even mortar and pestle surviving. We have no figures, but we suspect that for every drug store customer who asks to have a prescription filled, or even asks the druggist's advice as a professional man, fifty demand a specified article which the clerk delivers without comment,—a Coca Cola, a package of cigarettes, a cough mixture, a tooth paste, a beauty prep-

aration. The national advertiser has done his work well. The druggist as professional adviser and expert compounder has almost ceased to function. And indeed what does he know more than we of the chemical constituents and after effects of all these bright, gay bottles? He has a store to run, books to keep, a stock to move—and a jumpy, tricky stock it is. Troubles enough for one man in just trying to keep up with the procession, without pretending to know what these numberless packages contain.

Says the chemist for the Massachusetts State Board of Health: "In the average drug store, with its many and varied so-called side lines, little or no attention can be given to the systematic control of even the more frequently used drugs and preparations, and practically no supervision is exercised over the less frequently used drugs or preparations. . . . This combination of poor containers, imperfect storage and non-standard weights and measures is quite sufficient to explain why on analysis, preparations purchased from retail druggists are frequently found to be far from standard and appear to indicate carelessness or crass ignorance in their making." Drug store stocks averaged over whole states were found to contain as high as 40 and 50 per cent of drugs deficient in purity or strength.<sup>1</sup>

If you want a good shaving soap or cold cream, you will get little help from the corner druggist. It is not for him to play favorites. The manufacturer through his advertising claims that *his* is the best, regardless of price. To whom then may you turn for help? The answer is, nobody. By and large, nobody. But fortunately, although the question does not interest you much—there has been some help provided, and were it not so, the chances you would take in a drug store would be vastly more risky than they now happen to be.

The United States Government through the Pure Food

and Drugs Act has had something to say about many drug store products. The benzoate of soda content must be declared in the soft drinks. Sugar substitutes may not be used in candies unless declared on the label. It is required that labels on food preparations, beverages and drugs clearly set forth dangerous ingredients. Flat misstatements and fraudulent claims are not permitted on the labels of some products, however much they may be tolerated in the advertising to which the law does not extend. The quacks still flourish as we shall see, but the sky is no longer the limit as in the halcyon days before the passage of the Food and Drugs Act—at least in goods in interstate commerce.

Thus you have some protection for certain drug store products against vicious and harmful materials. No longer can the baby be kept quite so quiet—a quiet which has meant death—with the morphine once contained in Mrs. Winslow's Soothing Syrup. But you have no protection against articles which are valueless, and thus a sheer waste of your money; no protection against harmful ingredients if the formula on the label—when provided—means little to you; and seldom can you find a reliable word as to the relative merits of the brands in any one group. Try to discover the most lasting hot water bottle; the shaving soap that is best and cheapest for the purpose; the best fountain pen at a given price range; the least adulterated five-cent candy bar; the least doped cigarette; the best hair lotion; the jack-knife with the best steel; the least harmful laxative; the tooth brush of the right shape with the most enduring bristles. Just try to find it. . . .

You have a test despite this lack of information. It is a test, moreover, which the druggist warmly seconds. You use it—all of us use it—again and again. When in doubt—and when the need is urgent—the best brand is the *one that*

*costs the most.* "Give me that 50-cent tooth brush, it ought to be good at that price." Doubtless this test is sometimes sound if money is no object. But it is disquieting to know that of a group of lubricants tested by the Society of Automotive Engineers, the best for a specified purpose cost 20 cents a gallon while others no better ran as high as \$1.35; that good mechanics have found certain hardware in ten-cent stores with just as good steel (though not quite such a fancy handle) as hardware in stores where the price is two or three times as much; that it takes, according to the Journal of the American Medical Association, 495 bottles of Listerine to equal the antiseptic action of one cent's worth of corrosive sublimate.

It is also disquieting to learn that this impulse of ours has already been capitalized by the higher salesmanship. Goods no better than the general run are being deliberately marked up to catch the consumer who would have the best. A French perfume was lately introduced into this country. On its merit, its sales were disappointing. But when the price was deliberately raised above most other perfumes, supported by the slogan that "it costs a little more but *Milady* deserves the best", it became a large money maker. Our tendency to fall before the hope of better quality at higher price, was demonstrated lately by concrete test. Shoes of identical quality were displayed in a shop window—but one pair was marked \$6 and the other pair \$12. More customers asked for the \$12 pair! Could the pitiful ignorance and gullibility of the consumer be better illustrated?

It is disquieting to learn that this drug store liquid to kill moths which sells for \$1.00 the pint bottle, costs the manufacturer but one-twentieth of a cent per pint for the water and sodium fluosilicate which it contains, and is not a clearly established moth destroyer; while the bottle

beside it, selling for \$1.50, carries a wholesale cost of ingredients of just seven cents, and has no effect on moths whatever.<sup>2</sup>

And it is finally disquieting to hear the conclusion of a paper on patent medicines read by Dr. Arthur J. Cramp of the American Medical Association before the Associated Advertising Clubs of the World:

“Are there any patent medicines that should be advertised? My own answer to the question is that I do not know of any. The very conditions under which patent medicines are sold make such sales inimical to the public health. So long as proprietaryship and secrecy of composition are the controlling factors in the industry, there is too great an incentive to fraudulent and misleading claims. So long as modern advertising methods call for creating demands instead of merely filling them, the patent medicine business will continue to be a vast industry of playing on the fears of the public and making hypochondriacs by suggestion.”

We owe the Associated Advertising Clubs of the World an honorable salute for at least listening to the Doctor, but there seems to be no shrinkage of tall bottles wrapped in even taller stories, on these shelves.

Let us continue along Main Street.

Here is a grocery store, one of the units in a wide-spread chain system. It looks neat and efficient, from the white coated clerks to the gleaming scales. Here are fresh fruits, vegetables, an imposing package goods section, a creamery department, fresh meats, a bread cabinet, row upon row of canned goods and bottled goods, soaps, disinfectants and cleaning powders, oils and spices, cereals, and a bewildering



ing array of prepared breakfast foods. What protection beyond the word of the grocer (he is more generous with his advice than the druggist) have we here? What knowledge have we beyond the trial and error of past experience that these goods are good, and fit for the stomachs of ourselves and our children?

First and last we will find considerable protection. The laboratory of impartial testing has already made inroads into the grocery store. Our risks are markedly less than with the drug store. The milk (in many communities) is subject to strict regulation by municipal authority. It is graded according to butter fat content; it must not contain more than a stipulated number of bacteria; it may have its date stamped on the seal; we know that it has been produced under inspected sanitary conditions. Grade A is—where the law is observed—a thoroughly standardized and dependable product. Cream, butter and cheese may also be controlled in respect to fat content, labelling, and sanitary conditions of production—though the control varies from community to community. Even where the law is good, however, extensive operations in “bootlegging” illegal milk and cream may be carried on, as New York City learned to its cost in 1926.

The Federal Pure Food Act exerts a decided influence upon the canned and bottled goods because for the most part they are shipped interstate. It is difficult now to find a can of embalmed beef as in the good old Spanish War days. The extent of the preservative content must be shown on the label. Last but not least, the weighing scales are subject to more or less capable test and inspection; we are usually protected against gross short measure. There is not much that can definitely harm our stomachs (if we refrain from overeating) in a modern grocery store. But there still remains a great deal to be done in the deter-

mination of relative merit at a given price, and particularly in the determination of food values. These rows of breakfast foods for instance—all promising health, strength and vigor. . . . What are they made of and can anyone but a graduate dietician tell us how much of the valuable protein and mineral constituents of the grain are left in them; are we being sold two cents worth of food in ten cents worth of package? How many of us know that rice wholesaling at 7 cents a pound becomes puffed rice at 61 cents a pound; wheat wholesaling at  $2\frac{1}{2}$  cents, puffed wheat at 68 cents; corn at  $1\frac{1}{4}$  cents, corn flakes at 20 cents? Is the puffing worth the mark-up?

What do we know about the value of white flour as against whole wheat, white sugar against brown, polished rice against whole rice? Is a cake of yeast a day really going to move mountains?

These soaps and cleansing preparations, who is to tell about their value and efficacy? Will they scratch glass and porcelain ware? The Bureau of Home Economics says that nothing more abrasive than whiting should be used to scour porcelain ware, and that some commercial cleaning powders are much too gritty. How many of us know that the excellence of a soap powder varies with the hardness or softness of the water in which it is used, and that as a result, the stupendous advertising campaigns to make the whole country buy one kind of soap powder, means inefficient washing and waste in many sections?

Next to the chain grocery is the local haberdasher and dispenser of gentlemen's furnishings. He has caught the vogue of what is becomingly snappy in modern merchandising, and his shop and particularly his window display are appealing and attractive. He has perhaps read eagerly the window display tests which were recently conducted by the

School of Business of Columbia University, in which concealed observers with stop watches and recording instruments analyzed thousands of pedestrians as they passed before a store window, and determined quantitatively what arrangements and what colors brought the most people to a halt.

The dummies of wax with their curly mustaches have disappeared. The stock is arranged in gleaming cabinets with patented sliding doors and drawers, and the neckties are resplendent on metal hangers above the counter. With the aid of an up-and-coming equipment company which has furnished his store on the instalment plan, he has created that desirable atmosphere in which the consumer's wants are stimulated; in which it is no effort at all to spend money. Under the appropriate stimuli—as psychologists have taught the salesmen—responses are inevitable. We buy. Clean, fresh shining goods, beautifully laundered, beautifully packed; handkerchiefs in aseptic cases “which no human hands have touched.” It seems a pity to raise questions in this Eden. Yet we must.

What do we know about the wool content of these suits and overcoats; will they keep their shape; will they fade; how long will they wear? Is pure wool the most desirable fabric, or does a little shoddy help? How do these garments measure up to specified standards for textile fabrics? The United States Navy can lay down a specification for an officer's overcoat which will stand steady wear for ten winters. Will these overcoats do that? Alas, one of the few things that we are sure of in advance is that they will not. What is the best material for shirts from the standpoint of long wear; how can we recognize this material when we see it? What will a day on a sunny clothes line do to those pajamas, now so nobly blue and lavender? When will the casualties begin to appear in the stockings; and why is it

a safe bet that a pair knitted by grandmother will wear three times as long?

Harsh and untimely questions to such a cheery man in such a cheery atmosphere. They will depress him, because he knows the answer to them little better than do you. He does not buy to test and specification, but only according to the salesmanship of the jobber or manufacturer. He is almost as much in the dark as you are. He hopes that his goods are all right; some customers have been very well satisfied—that is about as far as he can go. It may be indeed—if he is one of the dealers whose customers care little about price—that every article he has for sale is sound, durable, and well worth the money paid. But if this is so, it is mainly a matter of luck, for there are no readily available standards of quality and durability to which either you or the haberdasher can refer. Advertising and trial and error are once more the only guides.

Yet for nearly every article on these shelves it is possible to set up standards proved and tested in the laboratory. Many such standards are already in existence, if you know where to find them. It is even conceivable that suits, overcoats, shirts and other fabrics might bear a label specifying their composition, dye fastness, warmth factor, durability factor, cotton, linen, silk and wool grade and content. Neckties we buy primarily for their color and sheen, but now and again it might be good to know if a particularly attractive color combination meant half a dozen wearings and then a hopelessly wrinkled ruin in the waste basket, or happily a longer period on the Avenue. Durability in luxury goods is often secondary, but it is a factor to be considered.

Which leads us into the exciting shop devoted to sporting goods; the topmost heaven for every urchin in town. Here is a stock composed almost solidly of non-essentials,

and so perhaps outside the test technique altogether. *Caveat emptor*. Well, let us see. Here are golf balls and tennis balls, the former made to specifications of the National Golf Association, and the latter to those of the National Lawn Tennis Association. Is it or is it not an advantage to know that your golf balls and tennis balls are of the proper size, weight, resiliency and durability? Here are complete camping outfits. No authority supervises them. Would you like to be assured that tents will not mildew and will shed water, sleeping bags keep one warm at specified outdoor temperatures; that blankets are wool throughout, and woven for warmth and lightness; that fishing lines will not snap short of one hundred pounds of strain; that canoes will remain watertight; that pack harness and tump line are of properly cured and tested leather? These radio sets—have you penetrated beneath the purple prose in which they are recommended, to the ultimate technology of their construction? When you buy brightly colored flies for that spring fishing trip, do you happen to know that fish are color blind? Apparently they are.

The balance of the members of the Merchants Association of Main Street (or of 42nd Street for that matter) lie before us—the hardware dealer, the stationer and news-dealer, the florist, the chain restaurant, the plumbers' supply store, the Sweets Shoppe, the dry goods dealer, the delicatessen store, the furniture store, the barber shop, the beauty parlor, even the undertaker. Time does not permit us to enter them. But in every one, to varying degrees, the same problems would arise. Here and there we would find protection for the consumer already won, and so natural and normal in its operation that no one thinks about it. Here and there we would find goods so far over the luxury line that protection was a very secondary matter



indeed, if not altogether absurd. But for the remainder—and one suspects that it would be the bulk of goods for sale—there is at present no available protection, no knowledge, no certainty; for consumer and dealer alike, an almost impenetrable fog.

### *Building a House*

A mile back from Main Street on a pleasant wooded hill stands a new stone house. You as the generic consumer have built the house. With the aid and advice of your architect and an intelligent foreman, you have acted as your own contractor, let out the sub-contracts to plumber, plasterer, and electrician, and ordered the bulk of all materials which have gone into the house. Your position is perhaps not the usual one, but it is common enough. (One of the authors of this book has recently undertaken the rôle, and we know whereof we speak.) And the problems which the amateur faces are similar in kind if not in degree to the problems which the professional contractor must cope with.

The walls of the house are of stone, backed with cement. (The new Flagg method.) The stone comes from the site and presents no problem. The cement is made to a formula standardized the country over, and broadly speaking one has to worry about neither quality nor price. If the walls are carefully laid they will stand a thousand years, as Roman walls of similar construction have stood. Your lumber for beams, flooring and roof presents no grave difficulties. Lumber is on the road to standardization, and you can trust your foreman carpenter's selection. (But if you live in the houses or apartments of certain speculative builders, you may have cause to know just how far short of proper standards of seasoning and quality it is still possible for lumber to be.)



So far so good. The protection furnished in cement and stone and lumber has given you a taste of what sound house building might be like. But it is, alas, the calm before the storm. Your troubles are about to begin. Shall the roof be of slate, copper, wooden shingles, zinc, or one of a bewildering variety of new composition roofings? Who shall gauge the relative merits of each, with due regard for the cost per square foot; who shall select the best for the money among these brightly colored circulars, these impassioned testimonials, these earnest and persuasive salesmen of asbestos shingles and their patented brethren in the field of composition roofs? Metal weather strips are said to be great fuel savers. Will they save enough fuel to compensate for the one thing you know to the penny, the very considerable cost of installing them? Are there any impartial tests available? Here is a list of insulating materials fighting for recognition, with trade names ending in "um" and "ex." They will, it appears, save you tons of fuel, decorate your walls, permit you to write peacefully in one room while Junior practices the saxophone in the next. How houses were ever lived in before these inventions you are unable to imagine! It only remains to pick one, but shall it be an "um" or an "ex"? Spin a coin for it.

An authoritative report on these materials, issued by the Insulation Committee of the American Society of Refrigerating Engineers, says:

"Owing to their thinness wall boards are not effective as insulators. It is the film of air on either side that provides a moderate insulating effect."

The woodwork both inside and outside must be stained, the inside walls of cement plaster must be painted. What kind of paints and stains and varnishes are best for the specific uses at minimum cost? For years the Government

had been buying varnish at \$4.37 or thereabouts per gallon. The Bureau of Standards with other industrial experts worked out a specification for outside spar varnish which in 1926 cost 78 cents per gallon. The Navy alone saved \$90,000 in buying one kind of varnish in 1923. Is there any varnish like that on the market, and where can you get it? The words on these cans of paint are brave, but how do you know that it will not crack and peel and discolor? You take a chance. Incidentally are any of these liquid floor preparations as good as the old-fashioned rubbed-in wax? And why do you have to pay 80 cents a pound for wax with a turpentine smell, when the Government, foregoing the smell, can get it for 22 cents?

Shall it be a coal furnace or an oil furnace? If in the interest of lightening the burden on divorce courts you select oil, what kind of an oil burner is best for your needs and pocketbook? All previous battles pale before this one. High pressure salesmanship here reaches the bursting point.

"There are four words in the English language which mean absolutely nothing to us and which we never use in making a sale or in interviewing a prospect. They are: FURNACE, HOT, COLD, and PRICE. We do not sell furnaces—we sell WARM-AIR HEATING SYSTEMS. We never mention the word hot air, but substitute WARM, MOIST AIR. We never say cold-air returns, but RECIRCULATING FRESH AIR DUCTS. We avoid the bugaboo price, and talk only in terms of investment."

So read the instructions from General Headquarters to the front line trenches—covering the hot dry air type of furnace.

When you come to electric refrigerators you will meet an equal onslaught. In oil burners you spin a coin again, but

in refrigerators a welcome light suddenly appears. By chance you stumble on the test conducted by a big corporation about to enter the market with one of its own, and a friend of yours has seen the data. (One make uses twice the current of another; the motor of one starts and stops 25 times oftener than that of another, under the same conditions.) At the price you can afford to pay, two makes are neck and neck. You take the one or the other with a sigh of relief.

What sort of hot water heater shall it be? What kind of stove—coal, oil, gas, or electric; and if you select electric, what make? You find no light in this darkness. The fortunate experience of a friend's friend finally decides the selection. There are power outlets in all the baseboards—what kind of vacuum cleaner shall you buy to fit them? Again no light, but advertising matter and demonstrations in unlimited quantities. Yet nobody can or will tell you how much of the contents of the vacuum cleaner dust bag is dirt, and how much the broken fibres of your rugs.

Meanwhile you admire the business-like manner in which the electrician goes about his job. You ask him how he selects his material, and you find that he does not select it. It is largely selected for him. The industry has standardized its equipment through a national code of practice and laid down regulations for materials and installation, which must be followed. Happy man! But only the chance remark of an engineer makes you provide your plumber with brass pipes for the hot water system. Nor is much light to be found in the selection of hardware. It is disconcerting to learn that one make of door hinge tested by the Bureau of Standards was found to have a life fifty times that of its similarly priced competitors. One was found to have a life of only nine months before rehanging of the door was needed. But what those makes are you do not know.

Mr. Sullivan Jones, State Architect of New York, assures us that your difficulties are not unique. The assembler of a house, he says, does not know which of two hundred competitive products for a given purpose is best suited to his needs, nor can he as an individual afford to determine this point in regard to his paint, varnish, roofing, radiators, locks, screens, weather-stripping and the rest. "On the average not less than twenty-five cents in every dollar the consumer pays for building materials goes to meet the cost of selling him. The net result is in general the substitution of one product for another. We are paying 100 per cent more for our building materials than we need to—the price of competition."

These then are a few of the problems which will face you as you build and equip your home. It would have been a better, more comfortable, more durable, and less costly house; you would not have hovered so near the edge of a nervous breakdown; untold paper, ink, sample materials, salesmen's time and selling overhead would have been saved, had you had access to an impartial testing bureau which could have given the same protection and assurance in the general run of materials, that was operating in the case of cement and electric wiring.

### *Buying for a Factory*

South of Main Street on the river is a small shoe factory. The owner prides himself on the high quality of the misses' and women's shoes that he turns out for a selected market. By and large they are good shoes. But they might be still better and possibly cheaper if the manufacturer knew more about the materials and supplies which he was buying. Suppose that his leather and findings could be standardized by impartial test; suppose that the new wing of his factory could be built from materials of the highest grade, and so keep down the costs of repairs, insurance, maintenance and

depreciation. Suppose the bulk of his machines and equipment could be protected by laboratory standards of quality. Suppose that his office supplies—his typewriters, adding machines, inks, ledger paper, stencils, stationery, could be guaranteed to be the best within his price range. (Instead of Dermal for moistening mimeograph stencils which costs \$3.20 a gallon in 8 ounce bottles, the Government uses a compound worked out in its laboratories which costs as low as 5 cents a gallon, and is equally good.)

There are lower costs for the shoe manufacturer in the testing technique; lower costs and much less time and worry. There is even a fighting chance of cheaper shoes for the ultimate consumer. A large gas company which recently introduced testing of gas ranges to assure safety and efficiency, increased its sales five times in about three years. This was the public's response to the scientific protection extended.

There is nothing in which Main Street takes more pride, and rightly so, than in its fire department. Almost every piece of equipment which the Captain and the volunteer crew use, has been bought to specification, following exhaustive tests, and its label manifests the experts' approval. Fires cannot be fought with hose which burst; with pumps that jam, with axes that lose their heads. The drama of flame and smoke has forced a dependability in fire fighting apparatus far in advance of the products of other industries. But a collapsing bank account has also a drama, and sometimes a tragedy, of its own.

If the run of goods in the shops and houses and factories of Main Street were as dependable as the combination fire truck which gleams in its shed beside the Post Office, Wonderland would well nigh cease to be.



## CHAPTER IV

### ONE HUNDRED BILLION DOLLARS

"Oh, don't bother me," said the Duchess. "I never could abide figures."

#### *The Testing Technique*

The time has come to tell more clearly what constitutes protection by test. In later chapters the question is examined in considerable detail with a description of the major agencies now in operation. At this point we can but lay down a few definitions. There are three chief ways by which the purchaser of goods may receive protection:

First, by virtue of *standardization*, either set up by the Government or voluntarily adopted by private industry. Milk is protected by Government standards; electric wiring is largely protected by voluntary agreement. The Pure Food and Drugs Act enforces certain standards with which the manufacturer must comply before it is legal for him to sell goods interstate. The electrical industry has standardized the electric bulb—the consumer always knows precisely what he is getting when he buys one of the licensed makes.

Second, by virtue of buying to *specification*. A laboratory prepares a formula covering a specific product—say fountain pen ink. The consumer comes into possession of the formula, and buys only that which meets its provision. The United States Government buys more to specification than any other body in the country. Its method is roughly



as follows: When a given product is under consideration, the Bureau of Standards engineers first secure samples of all significant varieties in the field and subject them to rigid tests, in order to determine comparative quality. Thus they inform themselves as to the current status of the technical art covering that product. Next they go into the field of pure theory and ask: What is the highest quality obtainable; what is the perfect product; and what are the reasonable limitations that prevent attaining perfection in commercial manufacture? Then the engineers, in committees of the Federal Specifications Board, representing the Government's interest as a consumer as well as its technical experts, write a specification. It is based both on theory and on the actual performance of the available types. The specification represents the best type for the purpose in hand as governed by the practicable limits of manufacturing and reasonable cost. The specification is then presented to manufacturers for their bids, after an opportunity for criticism and suggestion. When the manufacturer says—as he sometimes does—that the requirements cannot be met, the Bureau's engineers will either go out and show him how to do it—which has often happened—or, if he is right, they will lower the specification a notch or two.

To illustrate concretely. The Government became suspicious of gasoline pumps in filling stations. This was not a case of wanting to buy pumps so much as wanting to know if motorists were getting five full gallons when they asked for it. The Bureau was put to work. Engineers tested measurements and found them almost uniformly short. For the state of Illinois alone, they calculated that consumers of gasoline were losing \$600,000 a year from filling station shortages. The theory of a perfect 100 per cent pump was developed. Finally a specification was written, which if followed by a pump manufacturer would

permit an error of not over one-half of one per cent. Pumps made to this specification will give the consumer fair measure, where unspecified pumps had given him, generally speaking, nothing but shortages. The specification was made mandatory for the District of Columbia.

Here is a simple Government specification covering the purchase of foodstuffs:

Syrup; on samples:

Maple and sugar; to be composed of not less than 50 per cent of maple syrup, the remaining proportion to be straight cane sugar syrup; the whole to contain not more than 32 per cent of water.

Dr. Wiley found that a famous and widely advertised syrup contained only 20 per cent of maple; yet it sells at twice the price of this good, guaranteed, Government syrup. *And the Government buys, not in carload lots, but less than 200 gallons a year, under this specification.*

In 1900 there was an outbreak of poisoning from the adulteration of beer in the English Midlands wherein some 6,000 persons were made ill and no less than 70 died. When the beer, which contained arsenic in dangerous quantities, was withdrawn from sale, the epidemic ceased. Further investigation disclosed that the brewers who made the poisoned beer had all obtained their supply of brewer's glucose from one producer. The producer used sulphuric acid in his process. He had furthermore bought his sulphuric acid *without any requirement as to its purity*. The makers of the acid, not knowing for what it was to be used, had felt themselves justified in supplying an impure product. Here we have a manufacturer supplying dangerous material to another manufacturer and hazarding the health of the country-side in the process, because sulphuric acid was bought simply as sulphuric acid without careful *specifica-*

tion as to the exact nature and amount of permissible impurities.<sup>1</sup>

This case dramatically shows the need for specifications and standards as industry elaborates and specializes. The sulphuric acid maker was selling a product which *for some purposes* was nearly as good as though it had been chemically pure, but for converting starch to be used in brewing beer it meant agony and death. Specifications are the technical means by which the quality of goods for any given purpose is made sufficiently high so that health, safety or comfort in their use is assured, and that labor and material applied to their manufacture are not wasted.

The Government has developed over 11,000 specifications covering foodstuffs, soap, denims, metal polishes, hooks and eyes, motor boat engines, shipping cases, building materials, and so on indefinitely. Private industry through its own departments of research has set up thousands of specifications.

Third. The consumer may be protected by having the results of *impartial laboratory tests* made available to him. The theoretical 10,000 mile road test for the various makes of automobiles referred to in Chapter I would be such a case. Later we will note how the General Motors Company is actually conducting such tests for its own private information. The test of electric refrigerating machines now on the market, mentioned in Chapter III, is another case. First and last there are hundreds of tests of the highest value to the consumer completed, or in process, by various research agencies, but the results have seldom been coördinated and made readily available. The consumer at large only learns of them by chance if he learns of them at all. Certain large intermediate consumers—manufacturers mostly—secure the needed information by maintaining testing

laboratories of their own, or by retaining the services of independent research laboratories.

Before us for instance is the illustrated booklet of the Electrical Testing Laboratories located in New York City. It is equipped to test hardness, abrasion, impact, bending, and measurements of deformation. Specifically it will test for you headlights, flashlights, glass, lenses, mirrors, paints, photometers, lamps of all kinds, alloys, banknote paper, building materials, cloth, coal, coke, dyes, fats, inks, iron and steel, leather, oils, roofing materials, rubber, water, waxes and yarns. It will give you the bursting strength of paper, on the nail.

Only very wealthy consumers can take advantage of such services, excellent as they doubtless are. A test covering the essential properties of the cloth for your new suit might well cost more than the suit itself. These reports for private parties, duly paid for, are of course confidential. The general consumer receives no direct benefit from them whatsoever. Such protection as he secures from this source must come from the occasional release of tests made public by Government, university, or other public laboratories. And such are few and far between.

A scientist long on the staff of the Bureau of Standards estimates that for the two millions spent annually in testing and research, a saving of at least a billion dollars a year would follow the release of the information to the public at large. The invaluable data which save the Government a hundred millions, are not available, in a form that can be used, to that wider body of consumers who pay the Government's bills. A consumer can secure a specification—the maple syrup one for instance—by writing to the proper Government service, but he cannot secure the results of tests made on products now in the market, and

so guide his buying. With the naked specification only, he must hire a chemist or an engineer to find out what brands, if any, meet it. Practically, then, as the case now stands, the Government's specification can only help the larger buyer.

Why precisely does this technique make for savings; what wastes does it eliminate? When goods are bought to specification, quality is set, and such grades as are needed, scientifically defined. The buyer knows exactly what he is getting; the manufacturer knows exactly what he has to produce. Competition must then descend from the cloudy heights of sales appeals and mysticism generally, to just one factor—price. Who can meet the specification at the lowest price? Quality being predetermined, there is no longer any argument as to who furnishes the "best" product—there isn't any best or worst to furnish except as the product may be better than the required minimum. And down the trap-door goes all the advertising and all the salesmanship which falls under the general head of persuasion. Down goes the distribution overhead, and with it the cost of the delivered article.

Secondly, when competition is on price only, a battering ram begins to operate on profit margins. The manufacturer who shades his profit per unit the most, is likely to get the order. Down goes the cost to the consumer again—the maker secures large distribution at a small margin of profit per unit—the Ford-Woolworth idea. Both manufacturer and consumer benefit.

Thirdly, the manufacturing process itself tends to become simplified. It is no longer necessary to make so many styles and variations on the chance of catching the consumer's eye. Special features, fancy packages, drop out of the picture. The manufacturer can produce in larger units;



he has a better chance of "balancing the load" in plant operation. Thus the concern which now makes the Government's ink has no need for snappy salesmen, market surveys, sales conferences, for that section of its business; it can bend all its energies to making good ink, day in and day out, with no fear of seasonal variations, fluctuations, or market upsets during the present contract. A less exciting game perhaps, but the result is more sound workmanship. With the drop in manufacturing costs, down goes the price again.

Fourthly—and this is a category of the utmost importance—the consumer, buying to specification, is in a position to buy for a *specific purpose*. If tests have made it clear that a cheaper product, or a lower grade, or a different product, will adequately meet his need, he can buy the cheaper article and save the difference. *He no longer has to protect himself by paying the highest price, fearing that cheaper grades will be adulterated, or go wrong.* Government research finds that for some uses reworked wool has qualities just as good as virgin wool. It finds that certain limestones make better building material for specific uses than sandstones—thus upsetting an ancient dogma. If and when the consumer can be guaranteed by test and specification that the cheaper grade meets his purpose as well or better, down drops the price again.

Fifthly, buying to specification eliminates all possibility of deliberate adulteration. It drives the specious, the jerry-built, the actively hurtful from the market. Such products often represent a dead loss of man power and raw material in the making, to say nothing of the terrific overhead burden of astute salesmanship which now keeps them on the market. In the aggregate this too will operate to lower prices by eliminating waste.

We are now in a position to see why the Government can



buy materials at only a fraction of the cost which the general consumer must pay. The Government secures a certain, and on some goods a unique advantage, to be sure, because it buys in large quantities, but over and above this factor, are the five channels of saving enumerated above. When a specification cut the cost of varnish from \$4.37 to 78 cents, the saving had nothing whatever to do with quantity purchases. It was due to the debunking process alone, for large quantities were bought at both prices. A group of small consumers buying to specification may well equal one large Government purchase, and while the physical cost of distribution to the small consumers must inevitably be more, and so increase the price somewhat, the larger savings of the five channels enumerated above are potentially identical for both.

### *Normalcy*

"Why the smoke alone is worth a thousand pounds a puff!"

By way of contrast, let us look briefly at the way goods are sold through the normal channels of advertising. Mrs. Helen Woodward in her wise and witty autobiography *Through Many Windows* takes us behind the scenes. Mrs. Woodward was, before she retired in 1925, perhaps the most successful advertising woman in America.

"An advertising agency is a lively place. You pass so abruptly from non-skid tires to safety pins, from silk stockings to glass door knobs. You write one hour about a tree surgeon and the next about cog wheels. It is a place of swift movement—of constant shifts—of things finished at the last possible gasp—of seconds grabbed from eternity—of huge presses stopped to make a last minute change—of superhuman rush jobs—of hurrying and joshing and smok-

ing and swearing. Something happens every minute—some triumph or some disaster. There are no middle tones, for all is colored by the fury of creation.

"If you are advertising any product, never see the factory in which it is made. Don't know too much about it. Don't watch the people at work. Just know all you can about the finished article and the man who is going to buy it, and the conditions of selling in the business. Because, you see, when you know the truth about anything, the real inner truth—it is very hard to write the surface stuff which sells it.

"Copywriters work with a sort of cynical passion. The glories of so many products are brought before them; they are asked to be enthusiastic to-day about this soap, to-morrow that talcum powder, next week some automobile. They are told:

" 'Write down and not up to your audience.

" 'No, this paragraph won't do—it's too logical. They don't buy that way.

" 'Make them cry.

" 'Make them mad.

" 'Make them jealous.

" 'Make them envious.

" 'Don't try to be funny.

" 'Don't try to be clever.' "

Mrs. Woodward gives a case in point, the instructions she received from her chief when she was assigned to the job of writing copy (and famous copy she later made it) for an infant's food:

" 'As for this baby-food stuff,' he said, 'for God's sake put some sob stuff in it. You know. And make it beautiful, too. Make it beautiful, make the words sing. Heavens! There isn't a woman in the world that cares about facts. That kind of stuff you write for the *Woman's Home*

*Companion*, that's what gets 'em. Tears! Make 'em weep.' "

This is a long way from the laboratory. In such an atmosphere poetry can thrive, color, light, laughter, even creative effort—but hardly reliable information.

### *An Estimate of the Total Field*

The census of manufactures for 1925 gives us some idea of the enormous extent of American production. To mark off the goods which are already protected from those unprotected; and from the unprotected to cut off the luxury and semi-luxury total for which the testing technique is inapplicable—is a task utterly beyond the possibilities of statistical accuracy. The following table shows the "value of products" for various industries, as shown in Commerce Year Book for 1925. We have selected the figures for foodstuffs, manufactured products, and imports other than crude materials. In the right hand column some brief notes are given covering the protection which the consumer now receives. No attempt is made to analyze that protection in any detail, or to show all the phases of minor standardization policies which many industries are now experimenting with. The main purpose of the table is simply to give the reader some conception of the enormous stream of goods annually turned out by the farms and factories of the United States. Imports, it will be noted, form a relatively insignificant fraction of that stream.

Both the federal Pure Food and Drugs Act, and many state and municipal regulations, attempt to keep the great American stomach free from the grosser forms of adulteration. It must be remembered, however, that purity is only the first step in the technique of standards for the consumer. There is now no certified information on the relative worth of competitive brands of foodstuffs; little information on

food *values*. Even when regulation extends to quality and lays down rules for grading fruit and vegetables, retail dealers have been known to turn crates around to hide the grade mark from the unwary purchaser. Meanwhile the tremendous variation in local regulation and inspection must be remembered. In some areas there is no such thing; in other areas there are laws but no adequate enforcement; in other areas, enforcement of inadequate laws; in still others, good laws and careful enforcement. The State of North Dakota is one of the latter gold star districts. There are not many of them.

For products other than food and drugs, we find little in the way of protection. In cement and certain electrical equipment, voluntary standards have been nationally accepted. Certain transportation equipment must conform to standards of safety. The Steamboat Inspection Service and the Interstate Commerce Commission of the federal Government are particularly vigilant in this regard. Fire fighting apparatus is supervised to a considerable extent by the fire underwriters and their laboratories. For some large intermediate consumers, and for various Government purchasing agents, standards are assured by virtue of laboratories and specifications.

The table on pages 72 and 73 shows a total of 67 billions. This is not what the consumer pays, however. The census figure called "value of products" is farmer's or manufacturer's *cost* before adding the costs of distribution and selling. By the time transportation, advertising, commissions, and wholesalers', jobbers', and retailers' margins have been added, the consumer probably pays on the average, twice the "value of product" figure. For certain products, he will pay, ten, a hundred times that value; for others, such as standard foodstuffs, he may pay less than a 100 per cent advance. The Department of Agriculture reports that in 1922, con-

# VALUE OF UNITED STATES FOOD PRODUCTION, MANUFACTURED PRODUCTS, AND IMPORTS.

DEPARTMENT OF COMMERCE YEAR BOOK 1925

<i>Industry</i>	<i>Value of product</i>	<i>Extent of Protection</i>
Dairy products .....	\$2,747,000,000	Pure food laws, some local inspection
Vegetables .....	1,311,000,000	Some legal grading and local inspection
Potatoes .....	605,000,000	Some legal grading and local inspection
Fruits .....	657,000,000	Some legal grading and local inspection
Meat packing .....	2,586,000,000	Pure food laws, some local inspection
Flour and grain .....	1,049,000,000	Pure food laws, some local inspection
Bakery products .....	1,223,000,000	Pure food laws, some local inspection
Sugar refining .....	726,000,000	Pure food laws, some local inspection
Butter .....	655,000,000	Pure food laws, some local inspection
Beverages .....	229,000,000	Pure food laws
Condensed milk .....	200,000,000	Pure food laws
Cottonseed oil .....	226,000,000	Pure food laws
Other food manufacturing .....	2,630,000,000	Pure food laws
Drugs .....	308,000,000	Pure food and drug laws. U. S. Pharmacopoeia.
		Reports of American Medical Association
Lumber and mill work .....	2,187,000,000	Voluntary standardization for part of output
Electrical machinery .....	1,293,000,000	Voluntary and insurance underwriters' standardiza- tion for part of output
Gas .....	450,000,000	Local public service laws

Cement .....	264,000,000	Voluntary standardization nationally accepted
Fertilizers .....	183,000,000	Some state laws covering quality
Textiles and their products.....	9,487,000,000	—
Iron and steel and their products..	6,829,000,000	Some voluntary standardization of quality
Lumber derivatives .....	1,446,000,000	—
Leather and its products.....	1,880,000,000	—
Rubber products .....	959,000,000	—
Paper and printing .....	3,770,000,000	—
Chemicals and allied products.....	5,216,000,000	—
Stone, clay and glass products.....	1,274,000,000	—
Metals other than iron and steel...	2,634,000,000	Some voluntary standardization of quality
Tobacco manufactures .....	1,044,000,000	—
Machinery .....	3,435,000,000	—
Transportation equipment .....	5,333,000,000	A good deal of standardization in motor car parts and materials. Equipment, operation and safety standards for steamboats and trains
Musical instruments .....	283,000,000	—
Miscellaneous industries .....	1,687,000,000	—
Imported raw foodstuffs .....	495,000,000	Pure food laws
Imported manufactures .....	1,985,000,000	—
<hr/>		
Total .....	\$67,286,000,000	



sumers paid \$22,500,000,000 for all farm products, except livestock and cotton. The farmer received only \$7,500,000,000 for the same products, leaving a spread of \$15,000,000,000 to cover distribution, and some food manufacturing. The Joint Commission of Agricultural Inquiry after voluminous research came to the conclusion that approximately 50 cents of the dollar the consumer pays for even such a standard product as bread is absorbed in the cost of distribution.

We doubt if we would be making an unduly wild guess accordingly, if we estimated that the 67 billions "value of products" shown in the table, cost the consumer, both intermediate and ultimate, twice that amount, or 134 billions. The latter total includes, however, a certain fraction of goods already adequately protected, and another—and larger fraction—for luxuries, and so outside urgent need for protection. The Secretary of the Treasury estimated the total luxury bill of America at 22 billions for the year 1919. Much of this was not goods but services, and much was in the nature of reasonable comforts rather than wanton extravagance. One doubts if as much as half the Secretary's total—say 10 billions—would represent super-luxuries, for which testing methods would be irrelevant.

What the true total of goods susceptible to the testing technique purchased annually in America may be, defies accurate statistical statement. But, based on the above figures, would we be far wrong in estimating at least 100 billions of dollars a year at final selling value, after allowing for luxuries and the present areas already protected? If coal, crude oil, and other raw materials were admitted, it would undoubtedly exceed 100 billions. The latter products are not our primary concern, but a case for a certain amount of grading and standardization could readily be made in respect to them. How many householders have tried to heat their homes with slate?

As the national income is probably some 70 billions at the present time, it may be objected that with ultimate consumers expending not over 70 billions for all goods, services and savings, a figure of 100 billions is manifestly too high; it must include duplications. It does. We are dealing, it must be remembered, not only with ultimate, but with *intermediate* consumers. Take bread. The miller buys wheat from the farmer—he wants good, graded wheat. The baker buys the same wheat from the miller in the form of flour. He wants good flour of known color and baking performance. The housewife buys the same wheat from the baker in the form of loaves of bread. She wants good bread. There are thus *three* money transactions covering the same raw material, but the testing technique is applicable to *each transaction*, and a certain percentage of saving can be made on the turnover of each transaction. Duplications are thus admissible, contrary to the principles of most statistical summaries.

On purchases of upwards of 300 millions annually expended by its Washington agents, the United States Government saves 100 millions by tests and specifications—perhaps 30 per cent. On purchases, intermediate and ultimate, of 100 billions, what might the citizens of that Government save? Not the same ratio—for by no conceivable method could the same coördinated control of purchases be brought about. But billions enough could be saved to reduce drastically the cost of living.

## CHAPTER V

### THE ACROBATICS OF QUALITY, PRICE AND COST

Two finger-posts, pointing the same way, one marked TO TWEEDLEDUM'S HOUSE, and the other TO THE HOUSE OF TWEEDLEDEE.

THE next four chapters are devoted to an examination of specific products and specific methods. They illustrate the defenselessness of the consumer in some detail. The evidence which we shall cite is authoritative. Much of it has been unearthed from Government investigations. In presenting it we have no wish to draw an indictment against industry in general—unless it be on the broad ground of lost motion and waste; a ground which the United States Chamber of Commerce and Mr. Hoover have already taken with the greatest emphasis. But the general question of waste interests us less at this point than the specific methods by which the consumer, consciously or unconsciously, is kept in ignorance of what he is getting for his money. We shall record some deliberate misrepresentation and fraud, but such practices are only a fraction of what might be termed the unconscious, traditional mechanism of the market for which no individuals are directly responsible, which, like Topsy, just grew, and which in the aggregate furnishes the main element of loss to the consumer. We desire to show concretely where and how the consumer has failed to get his money's worth. Our appeal is to him; we want him to demand more light to the end that such practices will diminish, if not altogether cease. They will com-

pletely cease, alas, only in Utopia. In making that appeal vivid we shall have to pronounce a few names, and call a spade a spade, but our mission is not muckraking but education. And as we have repeatedly pointed out earlier, we are trying to remove the handicap which the manufacturer of sound goods now so frequently labors under.

It is difficult to make logical headings for this case history. Real cases have an unfortunate way of falling under a number of academic classifications. Reality usually sprawls. For better or for worse we have selected certain main headings under which the almost limitless variations of market ignorance may, for the purpose of getting along with the story, be grouped.

This chapter has to do with certain surprising variations in quality at a given price—or, if you prefer, in price at a given quality. For his dollar, the cases show, the buyer receives sometimes good quality, sometimes bad, and all variations in between; sometimes much for his money in quantity, sometimes little. The dollar is an adventurer's barque that may come home from the market with colors flying, or may be wrecked on a hidden reef. The first group of cases show the failure of price to measure quality, and how the highest price does not necessarily secure the best.

### *Meaningless Variations in Quality and Price*

Twenty-three representative carburetors were recently tested in the engineering laboratories at Purdue University. Just four of them adhered closely to what might be considered good all-round performance. Some were good for only one kind of operation, such as idling, level road driving, or hill climbing, or for one small range of speeds. A few had characteristics exactly the opposite of those which a reasonable specification would require. Forty per cent of the carburetors would not perform alike on different

trials. Only one-quarter of them permitted the engine to develop its full power; one-third of them caused *large* curtailment of engine output through unnecessary pressure losses. Thus a device costing \$2 or \$3 to make, throttles the performance of an engine worth a hundred times as much. The authors of the carburetor tests observe, "Some automobile manufacturers purchase their carburetors more on the basis of price than performance. . . . This causes not only a waste of money but also unnecessarily depletes our natural fuel resources. The difference in price between the more efficient and the other carburetors is usually so small that the added cost is negligible. . . ." Which kind is on your car? Is it any wonder that you buy a bottle of magic to give you 30 miles to the gallon in a field of such gorgeous uncertainty? <sup>1</sup>

It has been reliably computed that 15 to 30 per cent more paid for the average automobile would increase its life *ten times*—from 50,000 to 500,000 miles—a life so long that obsolescence would probably warrant the retirement of the car before it was worn out. Five hundred thousand miles may be too long a life for the ordinary passenger car, even though it is a sound figure for taxicabs and busses. Suppose, however, at an added cost of 20 per cent we lengthen the life of a car five times, to 250,000 miles. We save enormously, not only by making the car last as long as we should want to have it around, but by keeping it quiet, saving the bulk of the repair expense, and reducing by a large factor the number of accidents due to failing axles and brakes, and so forth. Cars have been made as good as this, but have not sold well, because not enough people would believe that they were really getting more for their money. If the result of the better material, design, and workmanship had been measured in open competition in the shape of durability tests, consumers could have been



brought to believe it, and some billions of automobile expenditures saved in the past five years.

The University of Minnesota found itself some years ago paying just half as much for laboratory alcohol as a university in a near-by state; and the same seller filled both orders for an identical grade and quantity on the same day. Various university purchasing agents, patronizing only three dealers, were found to be paying all the way from 65 cents to \$6.00 per gallon for the same alcohol. A pool order for 5 carloads enabled the purchase to be made for 25 cents per gallon. (The ordinary consumer will pay twice that much for a *quart*, and if it is bottled under a brand name, as rubbing alcohol, up to \$1.50 a quart.) The same purchasing agents found that a certain bristle broom made up according to Bureau of Standards specifications outwore others costing twice as much.<sup>2</sup>

A large maker of flashlight batteries sold two grades; one his widely advertised grade, and the other, *processed identically up to the time the label was applied*, selling for half the price. The making of high-grade goods under mass production is often so cheap, that it was probably easier to make both so-called grades of high quality than to attempt to vary the manufacturing process. Finding a different market outlet with the "cheaper" grade, helped to "protect" the dealer and the wall of national advertising behind him.

Flashlight bulbs and batteries show enormous variations in quality. Some of the cheaper bulbs are not only inefficient in that they exhaust the battery at a very rapid rate, but they burn out in a surprisingly short time. The Government has had specifications for dry batteries since the war, when the best and most lasting were necessary for the use of the Army and Navy. It is estimated that as a result of these specifications, the average of the product manufactured by the whole industry has been raised some 25 per



cent in quality. In fact, 100 per cent of some makes of batteries are now able to pass the Government tests. But the average consumer does not know what these makes are; he is just as liable to pick an inferior one and pay the same price for it.

A laboratory investigation was made of radio antenna insulators sold at a wide range of price, with the result that one of the best types was shown to be the cheap one sold in the 10 cent stores, sometimes known as "vulcanized mud." Three stores in New York offered radio fans precisely the same battery volt-meter, at prices of \$1.15, \$1.75, and \$2.25, respectively. Five makes of electric flat irons were found by laboratory experts to vary from 66 to 93 per cent of 100 per cent performance.

The United States Government can buy a first-class automobile oil suitable for the lubrication of the finest cars at 49½ cents a gallon in one-gallon containers. We will pay \$1.25 a gallon for oil at retail, often of an inferior quality. One automobile manufacturer gives us this significant warning: Always ask the service station man what kind of oil he sells before telling him the kind you want to buy!

What a private organization can discover to its own advantage is well illustrated by the surprising findings of Mr. John C. Dinsmore on behalf of the Educational Buyers Association and other purchasing groups. Mr. Dinsmore reports price differences for identical commodities varying from 10 to 3,000 per cent. For the Chicago Council of Social Agencies, he conducted, in 1917, an investigation into prices paid for milk. He found a variation of from 24 cents to 56 cents per gallon for substantially similar grades. Nothing was done about it. Eight years later, in 1925, he made a parallel study. The lowest price recorded was 25 cents; the highest 47 cents per gallon. He calculated a loss to Chicago charities of \$10,000 a year,

arising from these senseless variations. "We suggested to the officials of the great milk companies that they voluntarily reduce these overcharges. It appeared, however, that they were quite aware of the uneven price structure and justified it by necessity. They had, they admitted, simply charged what the traffic would bear and they did not care to make any adjustments in the prices paid by any institutions, charitable or otherwise." Other things being equal, the seller will usually charge what the traffic will bear, regardless of quality or manufacturing cost. The question still remains, can the buyer bear the traffic? <sup>3</sup>

Following the milk investigation, the Council of Social Agencies in Chicago investigated the cost of other supplies used by its members, and determined ratios as high as thirty to one on certain identical items. Ratios of several hundred per cent were common. Prices on liquid soap varied from 8 cents to \$2.75 a gallon. One of the best managed hospitals in Chicago purchased 8,000 pounds of washing powder at 15 cents a pound, which analysis showed was trisodium phosphate worth less than 4 cents a pound. Another paid five times the regular price of sal soda, under a proprietary name. Sweeping compound sold at \$7.00 a hundred pounds, when the basic sawdust was bringing \$7.00 a ton. <sup>2,10</sup>

The University Buyers Association tested the durability of floor varnish. It found that varnish at \$1.70 per gallon was equal in wearing value to varnish at \$6.00. Another investigation disclosed that boiler compounds were being sold as high as 35 cents a pound in a city where the quality of the boiler water did not call for the use of any compound whatever.

The difference between certain classes of articles sold in the 10 cent stores and those sold at three and four times the price in department stores and elsewhere, is often only

a trifling matter of finish. Some customers may be willing to pay for finish, but most of us would not if we understood the situation. The actual difference in manufacturing cost between the best Woolworth screw drivers and the hardware store variety is probably but the fraction of a cent which is needed to provide for a more careful inspection of the steel.

A widely sold proprietary table syrup, which retails at 65 cents per quart—and appears to be an adulterated maple syrup containing an unstated proportion of cane sugar—is in competition with pure maple syrup that can be bought direct from the farmer for 68 cents a quart including express charges, in lots of only 4 gallons.

Let us look in some detail at refrigerators, concerning which the consumer's only standard of judgment is the varnish, the white enamel and the price. The difference between ordinary household refrigerators and the best refrigerators is a factor of *two to one* in ice consumption. There are inferior refrigerators which permit food temperatures to go as high as 65 or 70 degrees F. in hot weather. At these temperatures food spoils eleven times as fast as at temperatures ten degrees lower. Refrigerators sold to apartment house owners often reach their market because no one would dream of using them if he had to furnish the ice himself. Ice consumption is intolerably high as a result of these conditions. The American Institute of Architects and the United States Public Health Service recently requested that standardization of refrigerators be undertaken. But the American Engineering Standards Committee, in an effort to initiate standardization found that the manufacturers, whose coöperation was essential, were unwilling to assist in carrying the work forward. They preferred Wonderland.\*

The lack of wide use of refrigerators is largely due to their wastefulness in ice consumption and their ineffectiveness in keeping food sufficiently cool. In some communities only 45 per cent as many people have refrigerators as have telephones. Only about 50 per cent of families generally use refrigerators. Stores that sell refrigerators know practically nothing about their ice consumption or interior temperature, in relation to their cost. Food storage and ice conserving efficiency are often items of mystery to the manufacturers themselves. One manufacturer, on being asked the name of the insulating material used in his product, replied, "Good old Michigan air."

It is difficult to name a commercial article of wide and important use in which less research and standardization have been done than household refrigerators. Nor one which needs them more. In Rochester, a city of 230,000 population, the waste from ice meltage because of improper insulation has been estimated at 60,000 tons yearly, or about \$350,000. An extra inch of corkboard insulation, adding \$20 to the selling price of a 100 pound capacity box, will save over six pounds of ice per day, or *18 per cent on the investment* if the box is used but six months out of the year. Ice boxes are generally badly designed in other respects. They permit a large heat conduction through the door frames. For the sake of "sales appeal" an unnecessarily large number of doors are provided, thus greatly increasing the difficulties of obtaining good insulation.<sup>5</sup>

From ice boxes we turn to beds. A firm doing business under the name of the American Feather Bed and Pillow Company, according to a finding of the Federal Trade Commission, sold bedding and pillows under the names, Princess, Washington, Progress, Puritan and Ideal, and represented them as being of different grades. Prices varied

correspondingly. The facts were that the bedding was all manufactured from the same grade of feathers, covered by the same grade of ticking, with no difference in grade, make, or quality. As orders were received, a label, suitable doubtless to the purchaser's idea of the proper price to pay, was attached.\*

From beds we turn to sheets. Teachers College, Columbia University, has recently conducted a test of cotton sheeting under the direction of Rosamond C. Cook. It illustrates so well the acrobatics of quality and price that we cannot forbear to describe it in some detail. Miss Cook first asks: How does the consumer go about getting the values she desires in textile fabrics like sheets? The buyer follows three general methods. She asks the sales person for information; she feels the quality with her fingers, scrutinizes it; she compares prices between makes. Are these common methods trustworthy? The result of the test shows only too clearly that they are not.

Nine makes of sheeting were selected. Laboratory analysis, based on Bureau of Standards procedure, determined the relative quality of each. This quality was then compared with the price. The make ranking eighth in quality ranked second in price. Of two makes whose quality was identical, one sold for two and one half times as much as the other! The make ranking last in quality sold for 20 per cent more than the make ranking sixth. The make ranking highest in quality sold for less than the brand ranking next to last. The lowest priced sample was sixth in quality. The highest priced sample was third in quality. The sample best in quality was lower in price than three others. In short, the consumer had an excessively slim chance of determining quality on the basis of price.



Next a group of consumer judges—not knowing the price—were asked to rank the nine samples on the basis of scrutiny and touch. The sample to which the group gave the highest ranking was fourth (tied with fifth) from the standpoint of the laboratory test. The sample placed second by the judges was actually seventh by laboratory test. The only sample where the judges agreed with the test was that which ranked last. In short the consumer had only one chance in nine of determining relative quality in the light of her own shopping experience. The worst quality alone she recognized.

Next a group of *salespeople* were asked to rank the sheeting. They represented two of the best known and most reliable establishments in New York. Textile training was regularly given to salespeople in both stores. *Their judgment was no better than that of the consumers.* The first quality and the fourth tied for fifth and sixth positions as judged by the salespeople, the second quality was adjudged seventh. Like the consumers, they identified the poor quality of the last two samples.

“Summing up, then, this study shows that the method of selecting sheetings, based on the consumer’s judgment of quality, the sales person’s judgment, and the use of price as an indication of quality, give a low degree of reliability. A study of the individual judgments shows that only when there is a wide variation in quality is the consumer able to make accurate judgments.”

Miss Cook then extended the scope of the study to determine what light if any might be secured from advertisements about sheets. Many magazines were searched and a large number of advertisements clipped. Such were examined carefully for any words or phrases which could be interpreted to describe intrinsic value. The following list is representative:



"Soft firm, right weight to give service."

"Priced within reach of a modest budget."

"Give practical use for years."

"Clear, cool, white color."

"Long enough to tuck in and fold down over the blanket."

"Woven of smooth firm threads, no filler."

The last is a definite statement capable of verification. "The other statements are too general or too obvious to be of help where exact information is desired. . . . If a summary of the advertising statements could be represented by a graph, a comparison would reveal as great variations as were found in the first two charts" (*i.e.*, the laboratory test versus price, and the test versus consumer judgment).

If the above is the case covering a fairly simple product like sheeting, what would similar tests reveal in more complex products? Inverse correlations, minus correlations, and acrobatics without end. Miss Cook ends with a plea for the manufacturer to register with the trade name certain *minimum* standards below which his goods would not fall.'

In 1925, sixteen makes of small motors such as are used on washing machines, vacuum cleaners, etc., were tested at the University of Michigan on behalf of one of the large power companies. Of the sixteen makes, twelve failed to comply with the standards of the American Institute of Electrical Engineers, the Electric Power Club (the manufacturers' organization), and the National Electric Light Association. Seven makes were found seriously below standard. Professor Bailey, who conducted the tests, says: "One cannot well help drawing the conclusion that many of these motors were built to meet a price rather than to give excellent performance." This case shows what may

happen even in a field—electrical equipment—which ranks high in its efforts to maintain quality standards.

Engineers testing oils reported to the Society of Automotive Engineers that "the oil which gave most carbon in all tests was that which sold at the highest price." <sup>a</sup>

We could go on quoting indefinitely, but perhaps the foregoing are sufficient to illustrate the trouble in which the consumer may find himself when the only test of quality is surface appearance or price. We have noted cases where the best was the cheapest, and vice versa. We have noted identical manufacture up to the time of affixing the label. We have noted almost unbelievable variations in the price charged for identical commodities, sold on the time-honored principle of what the traffic will bear. The interest of the consumer is always in the best product *for a specific use*. This is sometimes, as in the case of the radio insulator, the cheapest product in the field. It has been found that a second-hand file, resharpened, will do 20 to 40 per cent more work than a brand-new file! When we are cooking, we do not need the best table butter, but only the best frying oil. The interest of many advertisers, on the other hand, is to confuse this distinction; to make us believe that "it costs more but it's worth it," that "the best is none too good for you." If the telephone company bought poles on the slogan, "No better telephone pole can be made," it would move some steps toward bankruptcy. Its poles must measure to a standard of strength, straightness and freedom from decay, and that is enough.

#### *Margins between Manufacturing Costs and Selling Prices*

Gillette safety razors used to sell for \$5.00, including a dozen blades. A genuine Gillette razor can now be had

without the blades at Woolworth stores for 10 cents. It may be had free, including one blade, with a 35 cent tube of a noted shaving cream. The Auto Strop, another excellent safety razor, has suffered a like reduction to the Woolworth scale, including razor, strop and blade. The low cost at which many moderately elaborate articles can be manufactured under the principles of mass production is almost beyond belief. The labor cost on a certain automobile disc wheel as supplied on some of the finest cars is but 5 cents. A common knife-sharpening device, retailing at one dollar, has a material cost of about one cent, and a labor cost of not over 5 cents.

A mechanician known to one of the authors once bid on all the metal parts of a bicycle complete. His bid of \$3.65 was rejected as too high, although the selling price of the bicycle was at that time \$100. A maker of hard rubber devices put in a bid for all the hard rubber parts, complete and finished, of a well-known make of fountain pen, selling for \$2.75. His bid of 11 cents was rejected as too high. This case well illustrates the use and value of specifications. The pen manufacturer knew exactly what he wanted, and wrote it down in the form of drawings and specifications, and the price was under 11 cents instead of the \$2 which the parts would cost at retail.

As we have noted, prepared cereal breakfast foods retail as high as 68 cents a pound by the package. The cheapest ones, say the Department of Agriculture, are usually those sold in bulk. The housekeeper by grinding her own wheat in an ordinary coffee mill can secure a good cereal breakfast food for 3 or 4 cents per pound. Disinfecting spray, made of formalin, perfume, and Lake Michigan water, was marketed under a brand name at the rate of \$62 a barrel. When its composition was made known, the price dropped to 47 cents per barrel. Many materials commonly

sold as disinfectants have no disinfecting value at all—they merely give a pleasant odor, or one suggesting cleanliness. Yet real disinfectants are so cheap (costing \$1.50 to \$5.00 a barrel to make) that there is no possible need—save the desire to collect what the traffic will bear—to offer any but an effective product. Theater and hotel owners will be interested to know that most deodorants are paraffin oil (20 cents per gallon), with 2 per cent of pine oil added, making a total cost of say 22 cents a gallon. The manager will pay in the neighborhood of \$2.50 per gallon.<sup>9, 10</sup>

Here is carbon tetrachloride, an effective grease solvent, a clothes cleaning and moth killing agent, and a fire extinguishing liquid. It is widely sold under many proprietary names at prices ranging from 50 cents to 90 cents a pound. It may be bought at wholesale in moderate quantities for 8 cents per pound. Trisodium phosphate, a newly developed cleaning agent, is likely to come into wide use in place of soap powders and similar materials. It retails for 16 to 20 cents per pound under proprietary labels, but may be purchased for about 4 cents per pound in barrels. It removes grease and oil from machine parts in factories, softens wash and boiler water, cleans marble walls, staircases, dishes, glassware, windows, dairy utensils, bath-tubs and refrigerators. Duly decorated and bottled with a lithographed label and a pleasing perfume added, it is sold at tremendous margins over its basic cost—as bath salts.

Practically all metal polishes function through the action of some abrasive (sand or rotten stone), a cleaning agent or solvent (gasoline, benzine, or alcohol), a little soap to cut the grease, and sassafras or lemon oil to disguise the odor. The cost is trifling compared with the gorgeous retail rate. The best conceivable soap can be sold at 10 cents a pound, but a fancy toilet soap may cost several dollars. As to the disinfecting and "health-building" qualities of

soap, the amount of medication introduced is so small that the true worth of the compound is hardly above that of pure soap at the best. Experts say that the addition of medicinal agents is meaningless and wasteful, and that the treated soap may actually be *less* efficient as an antiseptic than a pure soap unmedicated. It is certain that no means exist by which the skin can be medicated and "fed" externally.

The best possible solution for waterproofing stonework can be made for 20 cents a gallon. The commercial price is \$2.00. A washing powder formerly sold to the Government at 16 cents a pound, and used for scrubbing floors, was identified as ordinary washing soda, available at 2 cents a pound. A blue aniline dye was added so that the simple nature of the material would not be so readily detected. A certain liquid soap is sold as high as \$1 a gallon, but in Chicago the Y. M. C. A. makes its own—a better grade—for 11 cents a gallon.

Roofing cement consists of coal tar and asbestos; or, when the roof is to be walked upon, asphalt cut with benzine. About four hundred companies make the latter, and not more than three vary from the formula given. At 45 cents a gallon it should afford a fair profit above manufacturing cost, yet it sells for from one to five dollars a gallon.

Floor oils and furniture polishes have the same basic constituents, and about the same manufacturing cost. Some are nothing but a light red mineral oil at 20 cents a gallon with a little perfume added. The combination frequently sells for thirty times as much per gallon as the wholesale price of the ingredients.<sup>13</sup>

A commercial preparation for moistening mimeograph stencils costs the consumer \$3.20 per gallon in eight ounce bottles. Made by the Government for its own use, the cost



went to the extraordinarily low figure of 5 cents per gallon and gave an entirely satisfactory product, according to the chief clerk of the Postoffice Department. (Formula: 16 teaspoons of glycerine to one gallon of warm water.) Three dollars and 15 cents, or 6,300 per cent more, is a good deal to pay for warming water, adding glycerine, and bottling. Addressograph ink has been made by the Government for \$1 per pound compared with an inferior commercial ink at \$3 per pound. Stencil ink has been made for 40 cents a pound, where the outside market price was \$2.50. The Government's writing ink—which is permanent, does not wash off when wet, resists chemicals, and really turns black—is purchased to specification for 23 cents a quart, whereas the going price at retail for ink—which often assures none of these qualities—is about \$1.25. But the Government Printing Office does still better,—it is now making its own writing inks, blue, black and red, at 9 cents *per quart*, not including the bottles.<sup>14</sup>

The Government buys typewriter ribbons meeting exacting tests for \$1.67 per dozen. The price to the general consumer is from \$8 to \$10. If one holds that the tin box and special packing are what make typewriter ribbons expensive, it may interest him to know that the Government contract provides an option of metal boxes, instead of pasteboard, at only half a cent additional per ribbon. The Government price for air cushion rubber stamps 6 inches long with a choice of twenty sizes and styles of type is 10 cents per line—delivered quickly, and adhesion of the cement guaranteed for two years. The usual price to the consumer through stationers, without the guarantee, is from 50 to 60 cents per line.<sup>15</sup>

Here is a dandy little jigger advertised to "stop the howl" in a radio tube. It will cost you 75 cents. The simple rubber cap of which it consists cannot be worth

over 5 cents at retail. Here is a widely advertised mineral oil for constipation. "One dollar starts you on the road to health." Maybe it does, but for that dollar you get a pint of an oil which at wholesale can be bought for 70 cents a gallon.

Carbon tetrachloride, as already noted, wholesales for 8 cents a pound. The druggist charges you 50 cents a pound even in 5 to 10 pound quantities. Carbon disulphide sells at wholesale for 6 cents a pound, and the druggist charges you 70 cents; ammonium sulphate sells for 2½ cents and he charges you 35 cents; sodium fluosilicate for 5 cents a pound and he charges 35 cents for half an ounce! These figures are based on stable wholesale prices as quoted in the *Oil Paint and Drug Reporter*, and retail prices secured by ourselves in New York drug stores the same month. How does the druggist account for such a gorgeous spread between wholesale and retail price? Nor do druggists as a rule grow rich. Waste we suspect claims most of the margin on these particular items; the waste inherent in the cost of carrying an unlimited number of branded tweedledees and tweedledums in stock at the same time.

Electrical flat irons imported at a landed cost of 77 cents sold at retail for \$5.50 and \$6.50, according to a Senate investigation. Marcel irons landed for 13 cents sold for \$1.39—a margin of 1000 per cent; Haarlem oil with a landed cost of 9 cents sold for 55 cents; cod liver oil landed for 7 cents sold for \$1.25; electric hair dryers were stepped up from \$3.57 to \$17.50; magnifying glasses from \$1.24 to \$12; table knives from 4 cents to 30 cents; cuckoo clocks from \$1.27 to \$22,—in New York, the port of entry.<sup>16</sup>

Here is an American made fur coat costing the retailer \$60 and selling for \$600. Here are neck scarves costing

the retailer \$18 a dozen, selling for \$12 apiece—\$144 a dozen.

In short, innumerable cases are to be found where the retail price is not twice but three, five, ten, fifty times, the manufacturing cost (and sometimes the wholesale price). Mass production is continually driving manufacturing costs down. Retail prices stay stubbornly up, often increase. Does this mean that the middle man is a greedy profiteer, putting these fabulous margins into his own pocket? Only rarely. The margins are mostly eaten up in selling expenses. The selling expenses are largely composed of useless and often unwanted services, of propaganda, special pleading, and misinformation which increase the consumer's ignorance, of carrying in stock a dozen brands of the same basic thing. "What we want nowadays," says Abe Martin, "is less Service an' more of what we're payin' for."

If the technique of tests, standards and specifications were in operation, much of the selling effort would inevitably collapse, margins would be forced down to reasonable levels above mass production costs, and profits would probably be steadier, if not positively larger, than they are at present. Think of the 400 separate concerns all making roofing cement to one basic formula—coal tar and asbestos—yet all doubtless spending money and plenty of it, to persuade the consumer of the unique and unparalleled excellence of each brand.

If the consumer knew the whole story, knew the basic formula, bought to specification on that formula, special pleading would simply evaporate, and mass production function as it ought.

## CHAPTER VI

### ADULTERATION AND MISREPRESENTATION

"Then fill up the glasses with treacle and ink  
Or anything else that is pleasant to drink,  
Mix sand with the cider and wool with the wine. . . ."

THE marked improvement in business ethics during the past generation, plus an increasing amount of legislation and Government inspection, have, by and large—and particularly in certain industries, such as food—distinctly raised the quality of the goods the consumer buys to-day. Whether, by and large, he gets more for his money, is another question. The mounting costs of salesmanship have first to be reckoned with before a net gain or a loss can be determined. Only an exhaustive statistical survey can hope to answer that question; and such the authors are not equipped to undertake. But standards of quality remain far below the line of what might be termed dependable performance in many industries; while in the case of all too many industrial firms, quality ranks at something less than zero. Meanwhile misrepresentation often tends to increase with sales pressure. This chapter deals with that very considerable area where adulteration, misrepresentation, and worse, are still in evidence. How large an area it is, no one knows; that it remains altogether too large, the following facts would seem to indicate.

Before proceeding, however, to the situation as it confronts us to-day, a word or two concerning the history of adulteration may not be out of place. It is a subject of

such importance that a whole branch of chemical literature has been devoted to it. Special technical societies have been organized to follow its ramifications; Government laboratories to check adulteration are to be found in nearly every country. Pliny comments upon the art. In Athens and in Rome there were special wine inspectors to catch adulterators. English statutes date from 1203. A wine falsifier in 1482 in Germany was forced to drink 6 quarts of his own vintage—from the effects of which he died. We note an ancient English folio: "Deadly Adulterants and Slow Poisons Unmasked, Or Disease and Death in Pot and Bottle." In 1860 the London *Lancet* published the names of hundreds of adulterators. Its tests disclosed only 3 pure samples of coffee in 34 examined. Even the chicory with which the coffee was adulterated, was itself adulterated! Of 49 samples of bread, *all* contained alum; of 56 samples of cocoa, only 8 were pure; of 100 samples of confectionery, 59 contained chromate of lead, 11 contained gamboge—an emetic—12 red lead, 6 vermillion, 9 copper arsenite, 4 contained white lead. Coffee "berries" were found to be actually manufactured from chicory and flour. Medical records showed arsenical food poisoning to be common in England.

At one time 50 per cent of English milk on the average was estimated to be adulterated with water. To-day it is not over 10 to 15 per cent. Watered milk looks bluish. To offset this, a yellow dye is introduced to restore that creamy color. When the process of sugar refining was changed, it produced a whiter sugar than people were accustomed to. To bring back the old shade, tin chloride was added. Enameled kitchen utensils have contained poisonous lead salts. Some still contain them.

Necessarily only a fraction of what is known about the ultimate character of goods ever sees the light of day.



Hundreds of chemists and engineers the country over are constantly testing all manner of manufactured articles, but their findings are largely reserved as the private property of some corporation; or kept as confidential material in the files of Government laboratories. Only rarely does a North Dakota throw open its laboratory doors for the aid and comfort of the consuming public. The consulting chemist who finds out for the A Company, that the soap manufactured by the B Company contains unduly large amounts of inert or harmful adulterants, is obviously not going to broadcast that information. It would ruin his business, to say nothing of his standing as a professional consultant.

Perhaps the Federal Trade Commission provides the best and most authoritative source for facts about fraudulent and misrepresented goods at the present time. It is far from a perfect source, in that its interest in the technical analysis of goods is distinctly secondary to its interest in questions of trade practice and simple chicanery under the provisions of its enabling act. In the main its cases have to do with such matters as stealing slogans from competitors, advertising goods as "direct from the factory to you," when the advertiser has no factory; "six big floors of furniture" when there is not one. We can only pick up occasional cases which deal with the specific composition of the wares of merchants and manufacturers. Nevertheless in the following pages we shall rely to a considerable extent upon the Commission's reports. They are authentic; they represent proven and often admitted facts.

Under date of October 1, 1926, the Federal Trade Commission ordered Nanyang Brothers, Inc., of New York City to cease and desist from selling under the designation of "Irish Lace" lace which was made in China. "The respondent's misrepresentation of its laces is to the injury and prejudice of the public and respondent's competitors."

On October 30, a similar "cease and desist" order was levied against the N. B. Bardwil Company of New York for doing the same thing—selling Chinese lace as Irish Lace. On November 1, 1926, the Daisy Products Company of New York was directed to discontinue advertising and marketing cloth hat bags coated with a black shiny surface, under the style of "Patent Leather," "Patent Leather Material," or "Patent Leather Fabrics."<sup>1, 2, 3</sup>

The Commission found Louis Philippe, Inc., and Park and Tilford, selling "Creme Angelus" as containing real lemon juice. Analysis disclosed no lemon juice in the preparation. "Novelty" and "Puritan" silks were found to have no relation to the silk worm. Samson Rosenblatt bought old, deteriorated baking powder from the Army and proceeded to resell it as "material guaranteed to be in perfect condition." He then, with singular courage, tried to sell some of the Army's old baking powder to the Navy, but the Navy, having a testing laboratory, rejected it as deficient in leavening power. The Hercules Hosiery Mills sold as "fashioned," a type of seamless hosiery, made over a cylinder, on which, after fabrication, a mock seam was stitched up the back so as to resemble a stocking shaped to fit the leg.<sup>4, 5, 6, 7</sup>

In the case of the Mack, Miller Candle Company, dismissal of the complaint took place, Commissioners Thompson and Nugent dissenting. The facts were that the firm sold as "beeswax altar candles" a candle containing less than 50 per cent of beeswax, although the practice of the Catholic church required more than a 50 per cent beeswax content. Analysis by the Bureau of Standards on behalf of the Commission, showed that the Company's candles contained only 11.5 per cent of beeswax. But the significant point is this. A majority of the Commission dismissed the case for the reason that "respondent has so

modified its business practices as to remove the cause of the complaint." But Commissioner Thompson in his dissenting opinion says: "Publicity in proper cases quickens the conscience of the entire industry and leads to a concerted movement to correct the conditions all along the line. . . . The Commission should give greater weight to the welfare of the industry affected and the purchasing public, than the interests of the single respondent who has been guilty of fraudulent conduct." In Mr. Thompson the consumer finds a friend indeed.<sup>8</sup>

The Commission in one bulletin reports four firms in San Francisco and Los Angeles, falsely advertising as "Philippine Mahogany," wood that was not mahogany. Mahogany does not grow in the Philippines. The Commission has long been in controversy with furniture manufacturers on the question of correct marking and description of furniture woods. During 1926 it succeeded in getting 861 concerns to subscribe to a code of honest labeling and cataloging; a code adopted by a conference of the industry in the latter part of 1925. Sixty-nine concerns have so far failed to subscribe, mainly on the ground that the code requires veneered furniture to be described as such, while the custom of the trade has been for many years to let the veneer speak for the whole material. If the gumwood desk was veneered with mahogany, the trade custom was to describe it as "solid mahogany." In July 1926, complaints were issued against a large group of Grand Rapids furniture manufacturers. "In these cases," says the Commission, "is involved the question as to whether the description of veneered furniture as 'Walnut,' 'Mahogany,' 'Walnut and Gumwood,' 'Combination Mahogany,' and similar terms is false and misleading." The National Retail Furniture Association at first approved the code, and then after the Grand Rapids manufacturers decided

not to abide by it, withdrew its approval. The National Better Business Bureau of the Associated Advertising Clubs of the World, on the other hand, has been active in connection with the promulgation and endorsement of these rules for the honest marking of furniture.<sup>9</sup>

The Nashua Manufacturing Company and Amory, Browne & Co., made and sold cotton blankets labeled "Nashua Woolnap". They contained no wool, although on labels used over a certain period, the caption "a perfect blend of the world's finest cottons" was added in small type. Amory, Browne & Company offended again in selling a cotton fabric produced by the Greenhalgh Mills, labeled (with the consent of the manufacturer) "De Luxe Pongee." Latterly it has been called "De Luxe Cotton," and thus somewhat nearer the mark.<sup>10, 11</sup>

The Western Elaterite Roofing Company was found by the Commission to be using the word "rubber" in labels, advertising, and other printed matter, to designate a certain type of roofing material impregnated with asphalt and containing no rubber. Furthermore the firm designated its roofing as "1-ply," "2-ply" and "3-ply", when in fact it was but 1-ply, or layer, in thickness. The Commission notes that "such fact or practice was and is well known to many of the jobbers and retailers of such roofing, but was not and is not so well known to the general public." This firm's use of the word "rubber" and of "2-ply" and "3-ply" were held false and misleading designations of 1-ply asphalt roofing, and it was ordered to cease and desist from improper use of these terms. The Durable Roofing Manufacturing Company, the Beckman Dawson Roofing Company, and the Barrett Company—the latter perhaps the largest and best-known firm in the industry—were all given "cease and desist" orders relative to similar practices. Meanwhile you may be interested to learn that

rubber, due to its rapid deterioration in exposed locations, is almost the *worst* flexible material imaginable for a permanent roofing substance. But the word "rubber" impresses the consumer as watertight and expensive.<sup>12</sup>

English Broadcloth, a fine cotton fabric made from the best grade of Egyptian long staple cotton, has been very widely imitated, the Trade Commission finds, by products of inferior appearance and durability. One will do well accordingly to take unusual care in purchasing shirts or shirting under the name "English Broadcloth."

Paints, varnishes and similar materials have been the subject of an unusual amount of adulteration and misrepresentation for more or less obvious reasons. In the first place adulteration cannot be determined with certainty at the time of purchase by anything but the most careful laboratory examination. In the second place the results of using bad paint and varnish are not disclosed for a long period—perhaps years—when the source of supply may long since have been forgotten. Moreover, the conditions under which such materials are applied are so variable that it is nearly always possible for the dealer to assure a customer that the surfaces were not properly prepared for painting; that the mixing or brushing on were incorrectly done; or that the exposure conditions were extreme or unusual. No consumer can be certain under such circumstances, that one or another of these factors did not contribute to the deterioration or failure. *Without expert opinion before he begins* he is often lost.

The Central Shellac Works sold "white shellac" and "orange shellac" adulterated with other gum substitutes, without indicating such other ingredients. The company was ordered to desist from labeling its products "orange shellac," "white shellac" or "shellac," unless the adulterants were shown on the label, under the caption "shellac



substitute" or "imitation shellac," with a statement of the percentage of other ingredients employed. Certain concerns were found to be adulterating their product with 20 to 40 per cent of resin or similar gums, without indicating such substitution on the labels of their containers. It is to the credit of the industry, that the National Varnish Manufacturers Association has by resolution defined the term *shellac*, and called for honest labeling that will not mislead either the manufacturer-user or the ultimate consumer.

Another company sold paint under the label "U. S. Marine Paint," when as a matter of fact the paint was not made for the Navy or any Government service, and was inferior to the quality of paint used by the Government. Cases where the lowest grades of paint have been sold under some such label as "U. S. Government Paint," "Army Cantonment Paint," and the like, have been very common.<sup>13</sup>

The Alfred Peats Company sold an inferior paint under the style of "Clover Leaf Brand". Over one-half of the solid ingredients consisted of adulterants and fillers substituted for white lead and zinc oxide. But its advertising read:

"Exceptionally high grade paint. . . . Has never failed to give . . . the best satisfaction. . . . Unequalled for use in every class of work where durability and high-class finish are desired . . . contains pure lead, pure zinc and pure linseed oil . . . the result is the best paint that can be made. . . . We absolutely guarantee that this paint . . . will not chalk and flake or crack off. It will wear longer, look better and cover more surface than any other paint on the market. . . ."

In addition to the defects already mentioned, the volatile constituents of this paint consisted of mineral spirits, and

the oil ingredient was not pure linseed oil. The Commission laconically reports that "said Clover Leaf Brand is not the best paint that can be made."<sup>14</sup>

The importance of honest paint, varnish and other rust-proofing products may be judged from the estimate of Sir Robert Hadfield, that the waste of materials through corrosion amounts to \$2,500,000,000 a year!

The Proctor and Gamble Company made and sold certain soaps and soap chips in the name of which the word "naphtha" is incorporated; for example White Naphtha Soap Chips. The Company nationally advertised these soap products as being especially effective because of the naphtha content, "which softens and loosens dirt merely by contact," which "dissolves the stubbornest dirt at a touch," "the naphtha in it supplies the energy your arms must supply when you use ordinary soap," "this double action cleanser." Let us quote the Trade Commission's finding:

"Such soap containing a petroleum distillate in an amount ranging from 0.09 to 0.51 per cent by weight of such soap, and such washing powder containing a petroleum distillate in an amount ranging from 0.019 to 0.26 per cent . . . and such soap chips containing a petroleum distillate in an amount ranging from 0.013 to 0.045 per cent . . . and such products . . . containing a petroleum distillate in an amount of 1 per cent or less by weight thereof, do not contain a petroleum distillate in an amount sufficient to be effective therein as a cleansing ingredient, and substantially to enhance their value and cleansing power upon their use by the consuming public."

The Commission held further that the use of the name naphtha to describe a product containing kerosene was

improper. Proctor and Gamble sought relief from this decision by appeal to the Federal Courts. The Supreme Court has held on appeal that the company must cease from using the word "naphtha" or its equivalent in the brand name of soap and soap products, and in its advertising and selling, to designate the presence of kerosene.

The courts have not yet determined, however, (December 1926), whether naphtha put into soap at the time of manufacture must be present in substantial quantities *at the time it reaches the consumer*, in order to justify the brand name Naphtha Soap.<sup>15</sup> This is a nice legal distinction, doubtless giving learned counsel opportunities for brilliant argument, but what, from the consumer's point of view, is the earthly use or value of naphtha (or kerosene) which evaporates before it gets to him; and why should advertising be based on qualities which are one thing in the factory and another thing in the laundry tub?

The Federal Trade Commission is in controversy (July 1926) with many of the best known American soap manufacturers regarding the question of "castile" soap, the fat basis of which the Commission holds should be pure olive oil. The companies maintain that the word "castile" may be interpreted to cover adulterants. One of the largest and best known soap manufacturers makes 7 different brands of "castile" soap none of which contains *any* olive oil.

Jewelry is in the category of luxuries, but methods of its adulteration may prove instructive. Fraud in jewelry, and the standardization of quality as a necessary corrective, dates back to Roman days. In 1238 England began the legal regulation of products made from precious metals. In the United States, the National Stamping Law, designed to control the marking of sterling silver, coin silver, gold

and platinum, has been practically inoperative because it has required proof of intent to deceive. Such proof is extremely difficult to establish in court. There has never been a single conviction under this law because of the word "knowingly" inserted in the penalty section. In the more recent state laws, the word "knowingly" has been left out, thereby removing the joker of intent to deceive. In New York City, convictions for misrepresenting the quality of jewelry have numbered twenty to forty a year. There are twenty-five to fifty cases on the Federal Trade Commission docket concerning such terms as "filled," "gold filled," and other designations now used to bewilder the purchaser.<sup>16</sup>

Mr. Morris L. Ernst, representing the Jewelers Board of Trade, reports that as soon as a conviction is obtained, on what is clearly a case of fraudulent description, "a new term is invented which is thought to be within the law and by means of which it is possible to deceive the public." A type of pencil commonly sold, is made in parts. The jewelers' association has held that the maker should not mark this pencil "14K" when only the small top part is in fact 14K, while the rest is thin plated material. Candlesticks are being made with the whole exterior, even the bottom, covered with a coat of sterling silver, but with the interior composed of pitch, cement, lead, or steel. Such are marked "sterling silver."

"Years ago," said Mr. Ernst, "when platinum sold for \$10 an ounce, it was not a very popular metal; then nobody wanted it; but as soon as the price went to \$100 an ounce, every woman wanted platinum jewelry. Now the manufacturer makes rings containing white gold, at \$14 an ounce, to the extent of 60 per cent by weight of the ring, with platinum at \$150 an ounce forming the remaining 40 per cent. He then proceeds to mark the ring 'Platinum, 18K.'" One piece of jewelry having a setting of "Platinum"

valued at \$300, when assayed, showed less than a dollar's worth of platinum.<sup>17, 18</sup>

The above cases serve to show the day by day run of the work of the Federal Trade Commission. We submit more taken from other sources as well.

According to its label, a well-known cleansing powder must not be used on iron bath tubs, washstands or sinks, because it will remove enamel from such fixtures. Solid "porcelain" articles are, according to the label, not injured. In the advertising, so far as we know, this warning is not sounded. How many people read the label? And if they do, how many realize that what is bad for the enamel on a bath tub may be equally bad for the enamel which covers "porcelain-ware" fixtures. The Government bulletin "Farm Plumbing" makes it clear that the treatment of porcelain ware should be much the same as that of table crockery—relying mainly on soap and water.<sup>19</sup>

Here are some gentlemen who purchased second grade galvanized roofing plainly stamped by the maker, SECOND. "Many jobbers and fabricators have no hesitation whatever in taking that stamp off with acid, and it is reported that one fabricator has gone so far as to stamp under the word SECOND, the additional words, TO NONE." He then sold it to the public as a prime sheet. We must grant him a sense of humor, if not of probity. Farmers will be interested to know that some makes of fence wire are so thinly galvanized that the manufacturer has difficulty in getting it away from the factory before rust sets in. Many types of shock absorbers for motor cars are being built in mass production, so completely inadapted to their work that they actually *increase* the discomfort of a passenger when he passes over a bump in the road.<sup>20, 21</sup>

A full-page advertisement appeared in a Providence newspaper not long ago calling attention to an air-heating



device which, when attached to a householder's heater, "would produce 25 to 50 per cent more heat per pound of coal, and 20 to 40 per cent less ash." The claim was backed by a \$1000 forfeit. A number of users were willing to say that the device justified the claim. (This always happens.) At this point the B. T. U. Society of Brown University, with the assistance of the faculty, made a careful test. The test showed that when the device was *not* used, 72.2 per cent of the heat in the coal was transferred to the water. When it *was* used, only 67.1 per cent of the heat appeared in the water. The proof was conclusive that the householder lost money when he installed the device! The \$1000 forfeit was not paid. Further investigation brought out the fact that when the device was put in, a thorough overhauling of the heater on which it was installed took place at the same time. Thus the improved performance which the purchaser noted was due solely to the improvement in operating conditions. (Again and again we note this technique of "tuning up" the motor, or the furnace, or the machine, at the time of the installation of a quack device.) A discouraging feature of the episode was the patent indifference of the Providence newspapers to the results of the tests made. What a horizon this last comment opens up. Newspapers and magazines which live on advertising cannot afford to take the consumer's side save in the most flagrant cases, and thus he is shut off from his chief source of information.<sup>22</sup>

In the fall of 1926, New York City was deluged with imported window glass. It was, however, *thick* window glass and it was sold as plate glass. What is the difference? A very considerable difference in color, transparency, strength, and polish, all duly laid down in Government specifications. "Speculative builders who sell their buildings before they are completed are the chief outlet for this

kind of glass, the purchaser believing until it is too late that he has the plate glass show windows he is paying for." The misrepresentation extended to doors, windows, store fronts, show cases, desk tops and automobile windshields. The price was often the regular plate glass price.

An amusing note appears in the Congressional hearings on the "truth in fabrics" bill: white salmon it is noted has been dyed pink and sold as pink salmon! As a result of extensive—and conflicting—piston ring advertising, many piston rings are being uselessly changed for others that are no better, and frequently are much worse. Experts investigated the fading of colored goods in brightly lighted shop windows. They found blue neckties unfit for sale after 32 hours of exposure to the light. It was pointed out further, that a single afternoon's wear out of doors would have had the same effect. Not only do styles change—they change as we wear them.<sup>23</sup>

### *Adulterations in Clothing*

Faded neckties, and Irish lace made in China are after all but isolated cases. Dr. Henry Harap in his *Education of the Consumer* presents us with a somewhat wider picture. He has made a rather careful survey of the major forms of adulteration and misbranding in the whole clothing industry. Let us briefly summarize his findings.

There is a Peruvian cotton which feels and looks like wool. It is mixed with wool fibers and sold as all-wool material. The process of making a nap on cloth has been so well developed that a fabric entirely of cotton may be made to resemble wool, or given what is called a wool finish, as was the case with "Woolnap" blankets. Material for men's summer suits, made of wool, shoddy and cotton blended, is sold as fancy cassimeres. Mercerized cotton (made by treating cotton with caustic soda) is often sold

as silk, or it may be used as an adulterant for true silk. Misleading names used are *near silk*, *silkaline*, *farmers satin* and *sateen*. Cotton yarn is passed off as silk by soaking it in a solution of pure silk. In that the value of silk depends, among other things, upon its weight, many methods are abroad for running up price by artificially increasing weight. A mineral salt bath will sometimes convert a pound of raw silk into three pounds of silk cloth. Such baths seriously lessen the strength and life of the fabric. There are ways of making cloth which expose a silk surface on a cotton base. Satins are made with a cotton back; pile fabrics are made with a cotton base.

"The following products contain no silk and are sold under names which lead the purchaser to believe that they contain silk:

Kapok Sun Fast Silks  
Lion Brand Sewing Silk  
Kloster Silk  
Sansilk

Maxwell Silk Poplin  
Esskay Unequaled Best Silk  
Subsilk  
Silkateen

Japsilk."

Cotton mixed with linen or specially treated, is sold as linen. Mercerized cotton is sold as linen. "Linen" towels are made of union goods, meaning mixtures of cotton and linen. "Irish linen" handkerchiefs often contain only 50 per cent linen. A drop of oil on pure linen is transparent; on cotton it is opaque. (Here is a test which the consumer can conduct himself). Starch, glue and gum are used to give body and gloss to cheaper grades of linen. The first washing undermines the finish. The following are cotton, though sold under the suggestion, direct or indirect, that they are linen:

French Linen  
Killarney Linen  
Linene

Near Linen  
Flaxon  
Linon

The chief furs actually consumed in the United States are limited to a small group of skins which in the terminology of the retail trade are almost never mentioned. "This is because furs are clipped, dyed, and pulled in such a way as to resemble those which are superior in wearing quality and in warmth. The pelts of animals from warmer zones, such as the woodchuck and the opossum, are sold under names of animals in colder climates. Such furs are inferior in suppleness and durability of leather, denseness and silkiness of under-hair, fullness of protective hair, and, because dyed, are brittle and less durable in general." A table of adulteration based on microscopic identification of commercial fur hairs has been prepared:

<i>Species</i>	<i>Altered or Sold As</i>
Hare, dyed	Sable or fox
Hare, white	Fox
Woodchuck, dyed	Mink, sable, skunk
Mink, dyed	Sable
Muskrat, dyed	Mink, sable
Muskrat, pulled and dyed	Seal
Opossum, sheared and dyed	Beaver
Rabbit, dyed	Sable
Rabbit, sheared and dyed	Seal
Rabbit, white	Ermine
Rabbit, white, dyed	Chinchilla

Testimony was introduced in the "truth in fabrics" hearings to the effect that 90 per cent of the fur sold in this country is not marketed under its right name. "Take 'Hudson seal,' there is no such thing. It is a trade name only." Meanwhile the durability of a hare skin is one-twentieth that of an otter pelt. David Mills, writing in the January, 1927, *Journal of Home Economics*, recounts the process of "pointing" furs, by which white badger hairs are cemented one at a time into a red or white fox skin dyed black, or into an inferior silver fox, to simulate a more costly skin.

It may well be that the fur industry is to be congratulated for making furs available to the moderate purse, but that is no defense for maintaining the practice of keeping the consumer in the dark as to the kind and durability of the fur she is buying.

In shoes, "oak leather" used to mean leather tanned by oak bark. Such is now used only for very expensive shoes, but any light-colored sole leather is commonly called "oak leather." So far as shoe sizes are concerned, the War Department found that only 15 per cent of the conscripts were wearing shoes that really fitted their feet. The braid used in straw hats is frequently of wood shavings, which, when lacquered, looks like and sells like the more expensive straws. In 1919, of all "silk" hosiery manufactured, 17 per cent was of pure silk, 74 per cent of silk adulterated with other things, 9 per cent of straight artificial silk. Perspiration is especially injurious to artificial silk, and to silk weighted with metallic salts. Meanwhile the latter deteriorates two to three times as rapidly under exposure to sunlight and perspiration as does unweighted silk.

Artificial silk which costs about half as much as real silk to produce, is frequently sold at real silk prices. Your "French balbriggan" underwear may turn out to be American made; "natural wool," "camel hair," "scotch wool," "lamb's wool," "Persian fleece," "natural merino"—is often a combination of wool and cotton. The Knit Goods Manufacturers, we are glad to note, have recommended the discontinuance of the above improper labels.

"Most of the clothing manufacturers and retailers emphasize style, cut, and shape of cloth. Great care is taken to select novelty fabrics, but practically no attention is given to the quality of the cloth. Manufacturers are concerned with the ability of the design to sell quickly. The manu-



facturing cost due to changing styles and fabrics is so great that cheap fabrics are used even in high priced suits." Dr. Harap's information for this statement comes from a special investigation of the United States Bureau of Foreign and Domestic Commerce. It is safe to say that if this is the tendency in men's clothing, it is far stronger in the case of women's, where the style factor is even more pronounced.

Dr. Harap is far from indicting the whole trade, but his facts serve to show the urgent need for protecting and informing the consumer in important sections of the great clothing industry.

### *Short weight and short measure*

Short weight is, of course, a variety of misrepresentation—probably the oldest one in history. So widespread and so persistent has been the practice that all modern governments have taken unusual pains to check its ravages. The Bureau of Standards was first set up as a weights and measures authority. With laws in 30 states, and improved inspection, the grosser forms of cheating by manipulating weights and measures are probably on the decline. They still abound, however, in many communities. In a single town in Illinois one of the authors found 18 out of 22 gasoline pumps giving short measure. Fifty large cities have no effective check on gasoline measurement. It has been reliably estimated that the loss to the consumer the country over aggregates no less than \$15,000,000 a year from filling station shortages—enough to finance the enforcement of weights and measures inspection in all the states on a generous scale.

The following cases are more concerned with certain astute forms of misrepresentation and selling the net effect of which is to deprive the consumer of full weight and

## A FEW CASES UNDER THE FOOD AND DRUG ACT

<i>Product</i>	<i>Manufacturer or dealer</i>	<i>Nature of Complaint</i>	<i>Finding</i>	<i>Disposition</i>	<i>Reference: Food and Drugs Act and Notice of Judgment Number</i>
Pure Food Gelatine	W. B. Wood Mfg. Co., St. Louis, Mo.	Adulteration and Misbranding	Glue had been substituted in whole or in part for gelatine. Product contained poisonous ingredients, to wit, zinc and copper.	Condemnation and forfeiture	9710
Harris Springs Water	Harris Springs Water Co.	Adulteration and Misbranding	Contained and was contaminated with fecal matter. Re claim of therapeutic value, "A Natural Remedy . . . for kidneys, bladder, stomach, and liver," article contained no substance or combination of substances capable of producing therapeutic effect claimed.	Product ordered to be emptied on the ground.	4441
A. D. S. Special Kidney and Bladder Pills	American Drug-gists Syndicate, New York, N. Y.	Misbranding	Analysis showed that claims on label were false and fraudulent since the article contained "no ingredient or combination of ingredients capable of producing the effects claimed."	Condemnation and forfeiture	13015
Roselle Brand Cherries	Fredonia, Preserving Co., Y. Fredonia, N. Y.	Adulteration	Larvæ or worms as high as 119 and 353 to the can; averaging 75 in one group of six cans. Decomposed and spotted cherries as high as 78 to the can; average number showing fungous growth, 53.	Condemnation and forfeiture	14090
Steel Cut Coffee	Steele-Wedeles Co., Chicago, Ill.	Misbranding	Product was a mixture of coffee, peas and rice hulls.	Condemnation and forfeiture	13563

A. & P. Sweet Milk Choco- late	Great Atlantic and Pacific Tea Co., Inc.	Adulteration and Misbranding	Excessive cocoa shells had been mixed with the product. Statement "Milk chocolate" false and misleading.	Release to claimant sub- ject to removal of fats and de- struction of re- sidue.	13468
Sunny Side Ketchup	Manufactured for the Jersey Packing Co., Cincinnati, O. Shipped by T. A. Snyder Preserve Co., Cincinnati	Adulteration	Examination showed 150,000,000 to 200,000,000 bacteria per cubic centi- meter; 63 to 73 yeasts and spores per 1-60 cubic millimeter; and mold fla- ments in 77 to 88 per cent of microscop- ic fields examined.	Condemnation and forfeiture	1346 1358
Olive Oil	Pace and Sons Providence, R. I.	Adulteration and Misbranding	Cottonseed oil had been substituted wholly or in part. Statement "Pure Olive Oil," false and misleading. Cans did not contain full gallon.	Condemnation and forfeiture	13911

In the 20 years of enforcement of the national Food and Drugs Act, 23,000 cases have been reported to the Department of Justice for legal action, and decisions have been handed down in 14,500 court cases. Imported goods have been proceeded against in 187,000 cases not requiring court action. About 300,000 food and drug samples have been collected and examined.

measure—rather than the more ancient and grosser forms of deliberate short weighting; of which illustrations could be cited endlessly.

In some communities eggs are sold by the pound—as they should be. A common practice in such communities is to gather up all the *small* eggs and ship them for sale in other communities where they are sold by the dozen. When sponges are sold by weight, they are liable to be loaded with salt, Epsom salt, and other substances to increase the tally. The Federal Trade Commission found 22 firms guilty of this practice at one time.

The North Dakota state laboratories discovered food packages (of the sifter-top variety probably) filled only to 20 per cent of their capacity. This was a very common practice during the war. Prices went up, weight went down, the package filled the same eye space. Most of us judge more by the look of a thing than by its heft. As a result of its analysis, North Dakota has prohibited the sale of food stuffs in incompletely filled packages.<sup>24</sup>

The War Industries Board found that thread manufacturers in order not to disturb retail selling prices, had reduced the yardage on spools from 200 yards to 150 yards, and were considering a further reduction to 100 yards. This was not straight misrepresentation in that the yardage was presumably marked on the spools, but the effect was to get less thread on what looked like the same sized spool. The waste of such practices was well illustrated by the action of the War Industries Board. It restored the 200-yard spool as standard, thereby bringing about a 25 per cent economy in lumber, labor, shipping space, wooden cases, cardboard boxes and other supplies. This single action released, it was estimated, 600 freight cars per year for other uses during the war. Now we are back to normalcy again.<sup>25</sup>

Losses to consumers through short weight in bread are said to amount to \$100,000,000 annually in the United States (\$10,000,000 in the City of New York alone). Much of this comes about because of the ridiculous diversity in weights of loaves, making it practically impossible for the consumer to judge price per pound. Data gathered in 67 cities on the weights of 3,000 loaves of bread, showed 105 different weights. In Vermont no standard weight loaves are baked. Many manufacturers in New York are selling loaves of bread for 8 or 9 cents, which instead of weighing 14 ounces (apparently the customary weight in New York City) weigh 12 or 12½ ounces. As most of us have a limited calculating ability when fractions are involved, we are rarely in a position to make any real comparison of bread costs.<sup>17,26</sup>

The Ozark Creamery Company packed butter in sizes imitating 4 oz., 8 oz., and 16 oz. cartons, but actually weighing 3½ oz., 7 oz., and 14 oz. While the exact weights were marked on the cartons, the Federal Trade Commission reports that "respondents knew that customarily the outer label or carton is not seen by the ultimate purchaser of the separate small units, and respondents, by shaping, dressing and packing butter in such under-sized and under-weight units, knowingly placed in the hands of retail dealers an instrument which enabled and encouraged them to sell short weight butter." The Commission noted that the practice was general in certain sections.<sup>27</sup>

One of the most interesting developments of the higher salesmanship, is the treating of the weight or contents of a package as a matter of no consequence to the buyer. The firms which regard the amount of salt or soap powder or noodles as too unimportant to mention (except where required by law), ought logically to be undecided about the price to charge—but such is never the case. The Battle



Creek Food Company sent out a price list under the date of June 15th, 1926, a number of items in which are listed at stipulated prices, but no indication is given of how much food the buyer will get for his money. For example:

Breakfast toast, package .....	\$ .30
Health chocolates, large package .....	1.25
Laxa, package .....	.90
Zo, new breakfast food, package .....	.15

Compared with a home prepared breakfast food of ground wheat for 4 cents a pound—than which nothing could be more wholesome—it would be interesting to see what these prepared breakfast foods worked out to per pound. In fact we *ought* to see.

Short weights and measures are thus by no means confined to methods which are legally fraudulent. All manner of devices are abroad, many of them muffled in advertising, for making the consumer think that he is getting more than he actually receives. Nowhere is this confusion more prevalent than in the sale of package goods, where the dominant motive is often to appease the buyer's appetite by the succulence of the container rather than by its tangible contents. The fact that package goods are handy, and by a judicious use of paraffined paper can be kept relatively fresh, is no excuse for attempting to remove them from all standards of relative cost per pound. The consumer may be glad to pay more per pound for convenience, but he ought to know *how much more* he is being called upon to disburse. The record should be clear. The net weight should be stamped on every package, bar, cake and bottle for purposes of comparison. No packages resembling standard weights—but a little lighter—should be legally salable. One of the authors walked into two different stores and asked for a pound of Sanka coffee. In both cases he was given a 12-ounce tin, as and for a *pound*, without comment.

In one store the tin was ready wrapped with no weight mark showing.

Finally, the lay purchaser has about one chance in 20 of securing in a department or hardware store, a weighing scale suitable for household checking of deliveries. One common type that is usually bought by the housewife, is notoriously unreliable, often to the extent of 1 or 2 ounces per pound, and is in fact forbidden by law for use in the transactions of trade. Thus no housewife can safely trust to its pointer in an argument with the butcher or grocer regarding deliveries. There are scales available which are good enough for any household purposes; which would indeed be sealed as accurate by weights and measures authorities. They are large enough to weigh the baby, and sensitive enough for determining the postage on a letter, but they are not quite so convenient, compact, or attractive in appearance as the more common inaccurate type; hence the retailer does not commonly supply them. He has no especial motive for advising the customer along lines that will give the purchaser a permanently satisfactory multipurpose article. The retailer does his best, following all the canons of up and coming merchandising, to sell you a small postal scale, a parcel post scale, a kitchen scale, and a baby scale—four inaccurate articles, where one accurate one would suffice.

### *The lower depths*

Dr. Chevalier Jackson, the eminent laryngologist of Jefferson Hospital, Philadelphia, testifying before a Congressional committee, cites numerous cases of dangerous lye products—such as drain pipe cleaners—bearing either no poison label at all, or only a very inconspicuous one. The palm must be awarded, however, to the preparation Kleanall, a product containing 75 per cent of the violently corrosive

poison, sodium hydroxide. Far from bearing the poison label, the printed matter read: "does not injure the finest fabric or the most delicate skin."

Hundreds of children undergo dangerous operations, and long continued after-treatment, while others die, because manufacturers of poison have been unwilling to hazard the loss of sales by giving sufficient warning to householders with young children. Very recently (in February 1927) a law was finally enacted prohibiting the interstate and foreign shipment of such products unless duly branded to show their poisonous nature.<sup>29</sup>

Gas appliances are often not only wasteful of fuel, but highly dangerous. Solid tops for gas stoves sold with the recommendation that they save gas and aid in keeping the range clean, often cause the stove to produce carbon monoxide. This gas is fatal in quantities of four-tenths of one per cent in the air, and in one-tenth of this quantity can cause headache, dizziness, nausea and vomiting. During 1925 alone, 607 people were asphyxiated in New York City by "faulty gas tubes or gas heating devices of an improper type." The Bureau of Standards in a very careful study of gas appliances reports numerous cases of impaired vision, general illness, and death from asphyxiation. In a single home in Washington, the Bureau found three different gas appliances that were dangerous producers of carbon monoxide. In Waverly, Massachusetts, in January 1927, 7 lives were lost because of a defective living room "gas log." As to the question of high prices guaranteeing high quality, the following quotation from the Bureau's report is of peculiar interest: "One of the *best* heaters, as far as combustion is concerned, had a burner cheaply built of light sheet metal of doubtful strength and durability; one of the *worst* was strongly built of the best materials and beautifully machined throughout." Five appliances com-

pletely burned the gas supplied to them under Washington conditions, and four did not. Both groups contained heaters which combined certain mechanical characteristics, but no feature of construction, or anything but a test of performance could eliminate the dangerous appliances. In this field a performance specification, and that alone, can protect the consumer.<sup>30, 31</sup>

It is a pleasure to point out that the gas industry, seeing clearly the danger both to the public and to its own best interests, has organized a well-equipped and competently manned certification laboratory. Its work will be reviewed in a later chapter.

Here are electric lamps of certain imported and "gyp" manufacture sold by the million, mainly to poor people who have to buy on a price basis primarily. They are represented to be of the efficient gas filled type, when really they are the ordinary vacuum lamp. Others contain the old-fashioned, hopelessly inefficient carbon filament which one can no longer afford to burn even if paid a bonus for doing so. Others blacken badly within 4 hours of use. The ten-cent stores, department stores, and drug stores are selling thousands of electrical appliances—toasters, sockets, cord, plugs—which have not been tested and approved by the Underwriters Laboratories and are dangerous—both from the point of view of fire, and of personal safety.

Four worthless and unsafe electric irons selling for \$1.00 each were found to burn out in from 3 to 35 minutes. (15,000 dozen of these were imported by one New York dealer). A test of the cords used to connect electrical appliances with the plug, disclosed a difference of 118 to 1 in ability to withstand deterioration from bending; and a difference of 34 to 1 in ability to withstand abrasion. Regarding substandard electrical irons, the National Fire Protection Association says: "These naturally will not be

found in stocks of recognized dealers in electrical supplies. They should be looked for in small shops and department stores." 32, 33

We believe that the foregoing evidence indicates only too clearly that there are significant groups of products, in which the production of sound goods, accurately described, and sold at a fair price, has not been the dominating motive of those in control of the process. We have seen that in the case of refrigerators, soap and cleaning agents, textiles, furs, weighing scales, paints, heating and cooking devices, varnishes, even loaves of bread, there exists an enormous burden of adulteration, bad workmanship, misrepresentation, sharp practice, and even downright bodily danger, which falls back upon the consumer. And who shall say how much is preventable if the consumer could be armed with the findings of impartial analysis and test?



## CHAPTER VII

### QUACK, QUACK

In my youth, said the sage, as he shook his gray locks  
I kept all my limbs very supple  
By the use of this ointment—one shilling a box.  
Allow me to sell you a couple.

THERE are five human desires which may be capitalized by the quack to his own great profit. If astutely managed, there are millions of easy money to be won from each. Millions have been won from each; millions are now in process of being won.

The desire for wealth  
The desire for worship  
The desire to be sexually attractive  
The desire for power  
The desire for health

The first is typified by the oil stock swindler, or if you prefer, by certain aspects of the Florida land boom. The second is typified by the prophets who arise from time to time amid the cow and corn states. The third is typified by the great "Lost Manhood" drives; by much of the activity of those preparations which keep us "clean and sweet"—free from unpleasant odors, with shining white teeth and gleaming hair and the skin one loves to touch—and by most of the strength building institutes which, with their cuts of mighty biceps, make such an appeal to

anemic clerks. The fourth is capitalized by those shrines of learning which undertake to teach us how to enthrall an audience in ten easy lessons, or to command the admiration of our associates by a course in personality building. The fifth is the realm of consumption and cancer "cures" where, by drinking the contents of the magic bottle, we may escape all the ills that flesh is heir to. It is proposed to devote this chapter to a consideration of what the magic bottle contains.

First a word as to the legal status of the industry. We think of the output generally as "patent medicines." Strictly speaking, only a very few of the nostrums are actually patented. A patent medicine, in the legal sense of the word, is one whose composition is *not* secret, in that it must appear fully set forth in the patent specifications at Washington. Furthermore, in seventeen years it becomes public property. This procedure is altogether too explicit for the gentlemen who sell us nostrums. Nearly all the remedies on the market are not patented, but are "proprietarys"—which means that the inventor keeps the formula to himself (except in so far as a certain very limited class of poisonous or narcotic ingredients must appear on the label pursuant to the Pure Food and Drugs Act), hunts up a name with good selling appeal, and gets that name registered or trade-marked at Washington. The name then becomes his property for all time. He may change the formula or process as often as he likes, but his proprietorship in the name remains intact. Some of these names—such as "Peruna" or "Tanlac" have been worth in their time millions of dollars. Anyone can make a mixture, but it takes great sums in advertising to impress a name upon the public to the point where it becomes second nature to call for the mixture that goes with the name. Despite these legal distinctions, we shall follow the Ameri-

can Medical Association in terming all nostrums, "patent medicines." This is what they are known as in the vernacular, and there is no great necessity for trying to change the term.

The consumer of "patent medicines" has his specific sources of protection. The federal government has given him the Pure Food and Drugs Act; the American Medical Association is untiring in its analyses of the composition and selling methods of nostrums. Before these champions entered the field—in 1905 or thereabouts—there was literally no limit to the mendacity of the advertising, the viciousness of the formulæ, the baby-killing, habit-forming, constitution-wrecking character, of the industry. In the last 20 years the change for the better has been marked.

The federal Pure Food and Drugs Act gives the consumer the following specific protection. No "false or misleading statements" shall appear on the label, or on the doctrinal matter which surrounds the package. The law does *not* apply to advertising matter apart from that on the package. There is no legal limit to the false and misleading statements which may appear in newspapers, magazines, direct mail appeals, bill-boards. As patent medicines are bought primarily by virtue of non-package advertising, the protection is thus more nominal than real. The Act provides that eleven drugs or their derivatives shall be stated on the label if they form any part of the ingredients of the package. These drugs are: alcohol, morphine, opium, cocaine, heroin, alpha-eucain, beta eucain, chloroform, cannabis indica, chloral hydrate, acetanilid. Further than this the manufacturer may maintain complete secrecy regarding the composition of his preparation. Lastly the Act covers only interstate shipments of drugs. If a New York manufacturer confines his sales to his own state, he can snap his fingers at the federal law. (There are, how-

ever, state laws of varying degrees of excellence and enforcement, to care for intra-state traffic.)

It is only too plain that the federal law, and most of the state laws for that matter, provide merely a beginning. An enormous amount remains to be done before the consumer can be said to have adequate protection. The American Medical Association is doing heroic work in attempting to bridge the gap. It has accepted the implications of a professional code of honor in respect to the public it serves, and is untiring in its analysis and exposure of medical quackery. But there is need for a great amplifier to give its reports a hundred—aye, a thousand—times their present volume.

If it be objected that it is to the economic interest of the orthodox physician to expose the quack, a little reflection will lessen this suspicion. The quacks through their advertising spread a great pall of fear over the country. Have you a little pain in your back—look out for Bright's disease! Have you a neglected cough?—look out for consumption! This artificially created fear drives the victim into the doctor's office as well as into the drug store. How about this pain, Doctor? And a perfectly healthy man pays a needless fee. Again, the self-dosing practices encouraged by the nostrum vendor sometimes result in very serious consequences which require the services of a reputable physician sooner or later. No. Were the physician's attitude toward patent medicines prompted by commercial considerations, he would say to the pill industry: "Go the limit, the more victims you get, the more patients will be driven to me!"

No other field can compare with that of curing disease in the variety and luxuriance of its quackery. The medicine man of to-day upholds the ancient traditions of the profession. His words may be different, but his conco-

tions are too frequently on all fours with those of medicine men down through the ages. For rheumatism, a hair ball cut from the stomach of a white ox at midnight in the full of the moon—many modern nostrums are no more intelligent. The main difference lies in the honesty of the concoctor. The ancients often believed in their incantations and brews of snakes' blood; the moderns with a few exceptions know perfectly well they are good for nothing, but submit that they need the money. They trade as we have noted on a fundamental human want—the desire to be free from pain, or free from the fear of pain. Frequently this desire is so urgent that price is no object, and preliminary investigation involves intolerable delay. Frequently, the sufferer passionately hopes to be cured in the secret of his bedroom without friends, family, or even physician discovering the ailment. Both desires lead directly into the arms of the quack.

In buying soap and shoes and sealing wax, the consumer has at least trial and error to help him. When he is let down too hard, he often knows it, and does not go back for more of the same. In buying patent medicines, and such devices as quack violet ray machines (the last word), trial and error are largely suspended, and for a strange but simple reason. The great majority of people who fall sick, recover in spite of the therapeutics involved. Nature, fortunately for the human race, and altogether too fortunately for the patent medicine manufacturer, has laid down that law. *Seven out of ten will recover regardless.* You are sick; you drink a few bottles of Pep-o-sene, and pretty soon you are well. Ergo—as plain as the nose on your face—Pep-o-sene has cured you. As a matter of fact, Pep-o-sene has done nothing of the kind. Nature has cured you, and probably would have done a quicker job without Pep-o-sene corroding your intestinal tract. But



hereafter, particularly if you are a simple person, you will swear by the dose, write testimonial letters, and recommend it to your friends. The truth will only come out on one of those minority occasions when Nature cannot pull you through unaided. It would take an astronomer, dealing in light years, to calculate what this principle has cost the American people in the past fifty years.

Not only does trial and error fail to operate, but in no other department of human affairs may fear be so profitably capitalized. One reference is enough to drive this point home. A patent medicine manufacturer instituted a campaign to urge druggists to stock his "cure" for appendicitis. He was very frank. He said that unless the product was put on the shelf, the druggist would have nothing to sell "to the man who has appendicitis, nor to the multitude who THINK they have or are going to have this dread disease. Fully 75 per cent of all cough and kidney remedies are bought by people who THINK they have consumption or some serious kidney ailment . . . and not by people who actually have them."<sup>1</sup>

Let us look through a volume of *Nostrums and Quackery* published by the American Medical Association and take a mine run of its contents. The following cases are based entirely on the official publications of the Association.

Here is Mr. Frank J. Kellogg of Battle Creek, Michigan. At the time the American Medical Association made its investigation he was selling Kellogg's Safe Fat Reducer, Sanitone Wafers ("the greatest Nerve Vitalizer known"), and Multo Fruito, a constipation cure. The selling method, as illustrated by Sanitone Wafers, was as follows: The product was first advertised in newspapers and magazines, and the reader advised that a "fifty cent trial package" would be sent free on application. Those who answered, received a small box in which were a few orange-colored

tablets, and by the same mail, a larger box containing a "complete thirty-days' treatment"—for which \$5 was asked. If the \$5 was not forthcoming—the follow-up letters began, each more urgent than the last. The first two letters asked for \$5; the third and fourth offered to accept \$3.50; the fifth and sixth advised that \$2.50 would square the account. The sixth letter ended the series; nothing more was said. "As it takes only four cents to send the \$5 treatment by mail, and as, apparently, the Kellogg Company would lose money by sending that four cents for the return of the treatment, the evident value of this \$5 package of pills was less than four cents." <sup>2</sup>

Dr. Kebler, Chief of the Division of Drugs at the Bureau of Chemistry, Washington, analyzed Kellogg's Safe Fat Reducer. He found it to contain: Thyroid gland; poke root; toasted bread. Before the Food and Drugs Act became operative, the nostrum was sold under the claim that the tablets were not a drug but a *food*, and that they "turned fat into muscle." Both statements, according to the American Medical Association, were unequivocal falsehoods. Further, "that the prolonged administration of thyroid gland will sometimes bring about a marked reduction in weight is true, but its use even under skilled medical supervision is fraught with danger."

Here was Marmola, another fat reducer made in Detroit. It held out the hope of taking off a pound a day—a "safer way of reducing cannot be imagined." Analysis disclosed thyroid together with other drugs. The thing was far from "safe." But observe what happened. After the disclosure by the American Medical Association, the formula was changed. Cascara was substituted for thyroid—thus making Marmola a simple laxative with no fat reduction qualities at all. It became safe but fraudulent.<sup>3</sup>

Dr. Arthur J. Cramp, director of the Bureau of Investi-

gation of the American Medical Association has recently summarized the fat reduction field. "It can be laid down as a broad principle that all 'obesity cures' come under one of two classes; those that contain thyroid extract and will actually reduce weight but are exceedingly dangerous, and those that do not contain thyroid and will not under any circumstances reduce weight." Among the latter, the doctor names:

La-Mar Reducing Soap ("This thing is unadulterated hokum")

Dr. Felt's Soap

Form-O-Youth

Melto Reducing Cream

Slendaform (which "would reduce the national debt just as effectively as it would reduce the weight of an obese person")

Silph Chewing Gum ("the latest fake in the line of fat reduction." "Just think," says the advertisement, "all one has to do to take off ugly unsightly rolls of fat is to chew two or three pieces of a refreshing delightful chewing gum") \*

Here is Sanatogen, a few cents' worth of casein reared through the eloquence of advertising to pinnacles unspeakable—a "gift from the Goddess of Health." Contrary to most "patent" medicines, the formula was actually patented. The copy was all up-stage. Only periodicals of the highest class were patronized, only testimonials from the haute monde were permitted. The art work, the printing, the phrasing, were a triumph of impressive dignity.

"Sanatogen is a scientific compound, every particle of which represents the finest concentrated tissue-constructing nutriment, endowed with unique revitaliz-

ing and rejuvenating powers. Sanatogen contains over 700 per cent more tissue-building, life sustaining nourishment than wheat flour."

Laboratory analysis showed that one dollar's worth of wheat flour contains as much energy as \$197 worth of Sanatogen. The stuff is the equivalent of modified cottage cheese. For one dollar the consumer receives 332 calories of energy in Sanatogen; for the same dollar spent for cheese he receives 11,850 calories, and for wheat flour 65,400 calories.

With this famous case, the patent medicine advertiser came into his own. He no longer needed to confine his activities to the ignorant; he had learned the technique for capsizing the intelligent—provided they knew no chemistry. Sanatogen was a straight class appeal, and the classes fell for it by the tens of thousands.<sup>5</sup>

While on the subject of chemistry, regard Mayr's Wonderful Stomach Remedy—for Indigestion, Gases in the Stomach and Intestines, Dizziness and Fainting Spells, Colic Attacks, Torpid Liver, Constipation, Yellow Jaundice, Appendicitis, and Gall Stones. "This remedy painlessly removes these accretions without surgical operation, takes out inflammation from the entire intestinal tract and renders the same antiseptic." This remedy, furthermore, went way beyond the faith cure technique. It produced Results. Visible Results. When the directions were followed carefully, the sufferer could examine his stools and see with his own eyes the "gall stones" and other "poisonous accretions." There they were, as big as acorns! What more proof of effectiveness could anybody want? The only trouble was that the acorns could be produced in a perfectly healthy stomach. Analysis disclosed that this Benefactor of Mankind was composed of the equivalent

of a dose of olive oil followed by a seidlitz powder. Chemical affinities being what they are, the combination will raise a crop of pseudo-gall-stones in any stomach every time it is administered. "As the amount of sodium found was in itself more than sufficient to account for all the combined fatty acids, it is probable that the masses consisted essentially of free fatty acids and soap (sodium salt of fatty acids)." The benevolent Dr. Mayr had turned the region behind the solar plexus into a miniature soap factory.\*

Here is Mrs. Potter's Walnut Juice Hair Stain, manufactured in Cincinnati. The laboratory found that the active principle of the dye was a phenolic compound—an anilin derivative, conforming to the test for paraphenylene diamine. The poisonous qualities of the latter have long been known. Altogether 32 cases of poisoning are listed as a result of the specific use of Mrs. Potter's concoction, with names, addresses, dates, and the reporting physicians. "The dye does not depend for its action on walnut juice." †

Here is Nyal's Compound Extract of Damiana—now defunct due to federal action, but nevertheless charming. Its label announced a 50 per cent alcoholic content and bore these words:

"Useful as an aphrodisiac and for restoration of virility in debility of the reproductive organs of both sexes. Damiana is a non-irritating sexual tonic. It also exalts intellectual faculties."

The Government found that the mixture contained cocaine and that the statements regarding aphrodisiac qualities were "false, misleading and deceptive." But what a beautiful sales appeal! \*

We note Ralston's Acme Diabetic Flour. Starch is dangerous to sufferers from diabetes, and it is the absence of



starch we pay for in a diabetic flour. The preparation contained 71.4 per cent starch.<sup>9</sup>

We note an alphabetical list of 235 "booze medicines"—alcoholic preparations sold under proprietary names as medicinal products. "As a matter of fact, the amount of medicinal agents—aside from alcohol—contained in these 'bracers' is so small as to be negligible."<sup>10</sup>

Albert Mathieu, a French physician, years ago conducted an experiment. He had a number of patients suffering from tuberculosis, and he gave them to understand that he had discovered a wonderful cure, a serum that he named Antiphymose. He injected his patients with the serum, which was nothing but a solution of common table salt, and carefully noted their condition. A remarkable change was observed; appetite improved, temperature diminished, the cough, expectoration and night-sweats were mitigated, the patients began to gain in weight. But of course no cure was effected. What he proved by this experiment was the curious psychological effect of hope on physical condition, particularly in the case of consumptives. And it is on precisely this phenomenon that the vendor of consumption cures grows rich. The credulous who swallow first his advertising and then the contents of his bottles—and lucky are they if there is nothing more harmful in them than common salt—do feel better for a time. They tell their friends, they write enthusiastic letters to the manufacturer—thus adding weapons to his testimonial armory; they order, with tears of gratitude, another half dozen bottles. The American Medical Association has found an almost unlimited number of consumption cures on the market. Without a single exception, all are bare-faced and unmitigated frauds. No medicine has ever been devised that will cure consumption.<sup>11</sup>

The activities of the worthy Dr. Judd Q. Lloyd are

typical. He devises a mixture which he calls Lloyd's Specific, and proceeds to concoct a highly ingenious method of salesmanship to get it before a waiting world. He approaches the president of a large sanitarium for consumptives in New Mexico—a coöperative venture carried on by fraternal organizations with members all over the United States. By processes unknown, the president succumbs to his scheme, and proceeds to send out letters over his (the president's) signature, on National Fraternal Sanitarium stationery, notifying members that the institution will not be open for the reception of patients for some months, and suggesting in the meantime that applicants for entrance should use Lloyd's Specific.<sup>12</sup>

When this mine was worked out, the good doctor changed the name to Sol. Anti-Phthisis (Lloyd)—thus giving it a pharmaceutical dignity, and tried to break into the list of approved New and Non-official Remedies of the American Medical Association. He was consigned to oblivion, but promptly changed the name to Aicsol (Lloyd) and sent out a broadcast of post-cards to physicians intimating, but not saying, that the preparation was now duly eligible.

Shortly afterwards Lloyd launched a mail order campaign direct to consumptives, and at the same time circularized the physicians again with an offer of tempting profits if they would buy stock in his company. In connection with both campaigns he secured an assorted lot of second hand monkeys, guinea pigs and dogs, and let it be known that he had inoculated these animals with tubercular bacilli and cured them with Aicsol practically at will. "He showed 'Bridget', a black and white collie asserting it had been inoculated and cured four times." The quotation is from a full page illustrated news story in the *St. Louis Star*. This story he is supposed to have secured by undertaking to purchase from the *Star* 100,000 reprints of

the article. The reporter detailed for the interview gives us another surprising bit of information:

"Some of the ingredients of the preparation are 'ic' acids, one of which is said to explode whenever an attempt is made to combine it with alcohol. This feat in medico-chemistry Lloyd claims to have accomplished although it has taken years of study and experiment to arrive at the result."

A reputable physician visited the Lloyd "laboratory" shortly afterward and reported eight rabbits, one guinea pig, a dog called "Kate" (cured four times), a brick oven, a gas stove, two kettles, a tent in which an alleged consumptive lived, three anemic monkeys, a chicken coop, eight empty barrels, and twenty-five girls sending out marked copies of the *St. Louis Star*. A better picture of the patent medicine industry it would be difficult to imagine!

A little later the name was changed for the fourth time, and became Re-Stor-All, and Lloyd let it be known through his advertising that the London Society of Science, Letters and Art, had awarded him a diploma of merit "in recognition of his valuable services to mankind in discovering the only successful treatment for consumption, and elected him an honorary member of that well-known society." Investigation disclosed that the well-known society turned out to be the creation of one Albert Sturman who kept a private school for boys in London, acted as agent in the sale of bogus degrees in America; and prepared "certificates" for small private schools in the provinces . . .

. . . This is the sort of story which time and time again lies back of the bottles on drug store shelves, and the bottles we unwrap so eagerly from their postal containers.

Here is Beto still advertised as a cure for diabetes as

the "Very Latest Discovery," including the viciously cruel claim that "absolutely no dieting" is necessary. Beto is merely Epsom salts and has no value in the treatment of diabetes.\*

The failure of federal regulation is well illustrated in the case of Doan's Kidney Pills. The government has declared that the claim of this nostrum to cure kidney disease is fraudulent, and the courts have upheld the ruling. But the Doan concern, by confining its advertising to the newspapers and magazines can make any claim it likes. For years the company has been making hypochondriacs by suggestion. Its advertising—"Every picture tells a story"—has carried the message to the public that any pain in the lower part of the back indicates kidney disease. It indicates nothing of the sort, but the advertisements continue to run, the frightened consumer continues to buy, and the Government is helpless under the present law.\*

Nearly 20 years ago, the Government seized a quantity of Mother's Friend, charging that the claims that this mixture of oil and soap would relieve the suffering incident to childbirth—would assist in safe and quick deliveries, would shorten the duration of labor—would cure morning sickness—would rob labor of its horror and pain—were false and misleading. The claims at the time were made on and in the trade package. Now they no longer appear on the package. But they appear directly, or by implication, in the 1925 newspaper advertising.\*

A particularly vicious group is that of epilepsy "cures." There are scores of them now on the market, some of them mail order preparations and others sold through regular retail channels. Five or six years ago, they all contained as their essential drug, bromides, usually in such doses as no self-respecting physician would prescribe. To-day a number of them contain luminal. Neither bromides nor luminal

have any curative effect on epilepsy. Both of these drugs do in certain cases control the attacks. But the continued use of bromides in large doses brutalizes the sufferer and leaves him finally in a worse condition than before the drug was administered. Luminal in the meanwhile produces severe skin rashes, gastro-intestinal disorders, and inflammation of the kidneys. Some of the more widely advertised bromide concoctions are Town's Epilepsy Treatment, Kline's Nerve Remedy, Guertin's Nerve Syrup, Miles' Restorative Nervine, Trench's Remedy, Lepso, Koenig's Nerve Tonic, and Wheeler's Nerve Vitalizer.<sup>4</sup>

Here is Nuxated Iron, which has thriven, and thrives, on the psychological effect of the word "iron." One's associative mental processes jump to iron muscles, iron endurance, iron manhood. When Jess Willard whipped Jack Johnson, it was Nuxated Iron which did it, according to the advertisements; when Dempsey knocked out Willard four years later, it was Nuxated Iron which accomplished the feat according to another great advertising series. What happened to Willard's iron in the interim is not disclosed.

Said Willard in 1915:

"Without Nuxated Iron I am sure that I would never have been able to whip Jack Johnson so completely and easily as I did."

Said Dempsey in 1919:

"Nuxated Iron put added power behind my punch and helped to accomplish what I did at Toledo."

Now what bright little boy or girl can guess what Mr. Tunney is going to say? But perhaps the Marines are made of sterner stuff.

A dollar bottle of Nuxated Iron was found by the chemists of the American Medical Association to contain less



than  $2\frac{1}{2}$  grains of iron. If an individual really needs iron—and the need is rare—he can get nearly 100 grains in a dollar's worth of Bland's Pills—which is a non-secret official remedy. In a Nuxated Iron tablet was found only one-twenty-fifth of a grain of iron, while the amount of Nux Vomica—the other drug ingredient—was practically negligible. "The claim that Nuxated Iron possesses great advantages over other forms of iron is the sheerest advertising buncombe. The indiscriminate use of iron is illogical and unwise. Few drugs have been more abused and taken with less discrimination than has iron." <sup>13</sup>

Bell-ans it appears will dispel vertigo, flatulence, weakness and other symptoms of indigestion; will relieve vomiting in pregnancy, alcoholism, seasickness and cholera morbus; will prevent eruptions, nausea, vertigo and pain . . . and a lot of other things. Maybe it will, but is it worth the money you pay for it? Here is the report of the American Medical Association: "Bell-ans (Pa-pay-ans, Bell) possesses the virtues—and they are few—and the limitations—and these are many—inherent in a mixture of baking soda, ginger and charcoal. Any druggist could put up just as good a remedy, and any physician could write a prescription for a better one in those cases in which he might think it indicated. The whole secret of the commercial success of Bell-ans lies in the mystery of its composition and the false and misleading claims that have been made for it. The same tablets put out under a non-proprietary name, as an open formula and with claims that were reasonable and true, would have had practically no sale." <sup>14</sup>

Again and again we run upon the peril of secrecy, both to the purse and to the welfare of the consumer. The secret preparation may be worth what we pay for it, or it may not. As the great bulk of patent medicines are originally taken

from standard non-secret medical prescriptions, and puffed out by salesmanship, it stands to reason that they *cannot* be worth what we pay for them. We have to carry the enormous advertising overhead, and frequently an enormous profit as well. We are fortunate in having a champion like the American Medical Association to break down the walls of mystery and tell us the facts as to underlying ingredients. But it is as yet a voice crying in the wilderness. The man on the street has never heard of it. In other fields, as we shall see, there is not even an organized voice.

These reports of the American Medical Association fill hundreds of pages, with old familiar friends, now stripped and bare under the laboratory microscope. But not many see these pages, and for most of the pill vendors business is still good. Our last glimpse shall be at Murine Eye Remedy. Before the Food and Drugs Act, the package read:

#### MURINE

#### A POSITIVE CURE

For Sore Eyes, Red, Inflamed, and Itching Lids.

After the Act was passed:

#### MURINE

#### A RELIABLE RELIEF

For Sore Eyes, Red, Inflamed and Itching Lids.

Chemical analysis showed Murine to be essentially a solution of borax in water with a trace of berberin or some golden seal preparation. Furthermore the formula was found to change from time to time. If you bought your own borax and mixed it with water, it is estimated, you could make about a gallon of Murine for five cents. But in the container it cost you \$1.00 an ounce—or \$16.00 a pint, or

\$128.00 a gallon—2560 times as much! Such stupendous margins of profit need preservation. The "Northern Illinois College of Ophthalmology and Otology" was organized by the Murine interests. "Its catalogue is profusely illustrated with reproductions of the diplomas, and full-page half-tones of the 'professors' and of the class-rooms. The pictures show large advertisements of Murine on the walls."<sup>15</sup>

The 1926 publication, *New and Nonofficial Remedies*, of the American Medical Association, analyzes hundreds of drugs which have been found acceptable for specified uses. For the preparations *not* described and that do not have the sanction of the Council, a long list covering about 1,000 patent medicines is printed at the end of the volume. Here are found many well known names. Each bears a specific reference to an article in the *Journal of the American Medical Association* where it, or its method of exploitation, has been analyzed and found wanting.

Finally, the American Medical Association gives us much interesting information on the technique of patent medicine merchandising. Here is a firm of letter brokers in New York City. It announces:

"The Right Way to Business Success  
Use Original Medical Mailing Lists  
The Direct Appeal Through Personal Letters

We compile freshly made up lists of names with correct mailing address of persons affected with the following ailments:

Intestinal Complaints  
Rheumatism  
Constipation  
Dyspepsia  
Nervous Debility  
Female Troubles

Blood Poison  
Bust Developer [sic]  
Consumption  
Drunkenness  
Eezema  
Eye Troubles

Obesity	Epilepsy
Facial Blemishes	Hair Preparations
Piles	Heart Disease
Skin Diseases	Morphine
Syphilis	Kidney Complaints

and all kindred ailments.

Rates for any of these classes:

1,000 names.....	\$ 5.00
5,000 " .....	20.00
10,000 " .....	35.00
25,000 " .....	75.00
50,000 " .....	125.00

*Cancer, Rupture or Deafness names cost \$20 per 1,000*

Simply indicate the section of the United States you prefer.  
Also whether you want Cities or Rural Districts.

Physicians and Druggists lists a Specialty

Address all Orders to the Medical Mailing List Company

Terms. Cash."

The special rate for cancer, rupture and deafness indicates that sufferers from those diseases respond more readily to a direct mail appeal than others. The rate is four times as high, and there is no discount for quantity.

Among tabulated subscribers to the service, the Company lists:

Dr. R. V. Pierce  
C. I. Hood and Co.  
Dr. F. E. Greene  
I. S. Johnson & Co.  
Sterling Remedy Co.  
Dr. Hartman Peruna Drug Mfg. Co.  
Standard Oil Co.  
Dr. L. R. Williams  
The Hegeman Corporation

Riker Drug Corporation  
Munyon Remedy Co.  
Lydia E. Pinkham Medical Co.

And we are finally assured that: "Original medical lists are sure business getters; absolute fortune producers."

One can well believe it. Instead of bombarding the public by means of the city directory, the letter broker enables the nostrum vendor to approach only those who suffer from the specific disease that the nostrum is advertised to cure.

Mrs. Harriet M. Richards operated (at the time of the Medical Association report) the Woman's Mutual Benefit Co. of Joliet, Illinois. Her activities throw light on how the names of those ill with specific maladies are collected. She advertises that she will give the sufferer aid and advice and further that "the letter will be treated strictly confidential." The confidential letters, she proceeds to rent to any quack who is willing to pay \$5 a thousand for them. "The company which makes a business of buying and selling letters of this sort claims to have for rent more than 140,000 of the Harriet Richards letters."<sup>17</sup>

Here is the American College of Mechano-Therapy. The student is assured that he will be fit to practice this great art within six months of matriculation, and that his income should be from \$3,000 to \$5,000 a year. Furthermore his medicines will be not drugs but "scientific combinations of food, circumstance, idea, water and motion." Best of all, the curriculum includes the Business Side of Mechano-Therapy, to wit:

"How to approach a patient

How to get the fees at once

The business talk that will make the patient willing to  
pay the fee



How to handle the question of the size of the fee  
Real Money Talk  
Always get cash down."<sup>18</sup>

Next we are led into the mysteries by which "testimonials" are secured by the pill vendors. This, it turns out, is a major industry, with a bewildering array of technique. Sometimes the present of 12 cabinet photographs will fetch a testimonial; sometimes it takes cold cash. Dr. Gardner's Remedies Ltd. of London offered to pay "one guinea each for every bona fide testimonial that is printed, and one hundred pounds cash for the *best* testimonial received before December 1, next." The Manola Company in a circular letter to physicians, warned them that it was preparing a book of "clinical reports." For every case covering the virtues of Manola which the physician cared to submit, "as a token of our appreciation we will send you three full-sized bottles of Manola, express paid, for your personal use." But no testimonial game evolved to date can beat Famous Names, Inc., described in our first chapter.<sup>19</sup>

There are also data on ways and means for securing chemists' certificates covering the excellence of a drug. An editorial in the *Druggists' Circular* gives an outline of what may sometimes be expected. A drug manufacturer accosts a chemist, an old friend, and during the conversation remarks:

"By the way, professor, I would like to get your certificate of analysis for my preparation."

"Certainly," said the professor, "I'd be glad to make an analysis for you, and I won't charge you much either. Send me a package as soon as you like."

"Oh, never mind the price; I'll pay you well, and don't bother about the sample either, I have a certifi-

cate of analysis here in my pocket (producing it) and all you need to do is to sign it."

The chemist looked straight into the eyes of the manufacturer for an embarrassing second, and then calmly informed him that he had selected the wrong man. The brazen manufacturer, not to be so easily silenced, retorted:

"Oh come on, now, they all do it, you know they do, and you might just as well pocket the fee as see it go to the next man."

Presumably the fat fee went into the pocket of the "next man," and no doubt the latter's name is now going all over the country on the advertisements attached to a certificate of purity which druggists and the public are expected to accept as gospel.<sup>20</sup>

We note also the practice of using a clipping agency to collect every case of suffering from classified diseases in the small town press.

Mrs. William Wilcox of Jordan Avenue is confined to her bed with an acute attack of rheumatism.

The notice is clipped, forwarded to the cure-all manufacturer, and in a day or two Mrs. Wilcox receives the happy news that Angeline is destined to make her a New Woman.

We note certificates and testimonials prepared by chemists and medical men on the payroll of the drug makers, but put out in the advertising as impartial reports. We note what may be termed the quintessence of advertising—the loftiest height ever reached: the imprint of Purgen, a laxative, on sheets of toilet paper.<sup>21</sup>

The patent medicine business dramatically illustrates the fact that goods of no merit can be sold if only the advertising pressure is high enough. The Sargol fraud was earning

more money in its last year than ever before. It would be earning it yet if the Government had not stopped the enterprise. The Oxydonor swindle was a gold mine up to the time that one Moses, its promoter, was sent to the penitentiary for selling it. Brother Samuels made a fortune out of merchandising a weak solution of sugar and salt in hydrant water as a cure for all the ills of the flesh. "Repetition is Reputation. . . . Repetition is Reputation."

*Standard Remedies*, a mouthpiece of the patent medicine interests not long ago so far forgot itself as to give the whole show away in the following editorial:

"It should be remembered that while a developed formula has great value, it is the trade name, the advertising, the merchandising skill applied in connection with it that creates its valuable good will. Ten to one a thorough search through books of formulæ will reveal that your own is already known to the medical world. But no one can get the same benefit from it that you have gained unless they spend in merchandising it the same money you have spent." "

The essential fact to realize about patent medicines and medical quackery generally is this. *No self-respecting scientist ever compounds a secret remedy or a secret process.* He knows that secrecy in the premises is only one step from voodooism. He may prepare an open and described process and secure exclusive right to its use by means of a patent—but as was pointed out earlier, "patent" medicines are very rarely patented. The name is trade-marked, that is all. The pill vendor takes some drug or combination of drugs that has been worked out by a scientist or crystallized by practice, and listed and described in the pharmacopœia, adds a dash of pepper, or a bucket of tap water, or a pinch of coloring matter, and proceeds, by advertising, to weave a hypnotic spell around the mixture, and so happily to sell

it for ten times, a hundred times the cost of the underlying open formula. Such is the stock procedure of the more honest members of the fraternity. Below them are the go-getters who have no basic formula at all, but simply irresponsible mixtures of salt and sugar and sea water. Below them, crawl the dealers in "repeaters," who sell vicious, habit-forming drugs to brutalize, ruin, and destroy those who buy them; and who, after the first splurge, need not spend so much on advertising, as the poor wretches keep coming back for more. It is the latter class which the Pure Food and Drugs Act chiefly disquieted, but it is still far from vanquished. The first two classes have hardly been touched by law. In these fields, the consumer is almost completely unprotected, save when the exposures of the American Medical Association reach his ears.

We admit of course the need for a limited number of simple standard remedies, which are safe for use in the hands of the layman, and available at moderate cost to those who cannot afford medical attention for minor ailments.

The domain of the modern medicine man is not so much a Wonderland as a rotting miasmal swamp. It touches the uttermost limits of human degradation. For those who trade for profit on the hope and despair of the sick and ailing—who deliberately throw straws to those floundering in pain and anguish—no stricture, no contempt, is too great. They above all others, are the vultures of modern civilization. The oil stock swindler is an Olympian beside them. Of the sum total of articles for sale on Main Street, it is these slops and brews and pellets which commit the basest outrage on the consumer, and which are most in need of the searchlight of decency, truth, and knowledge.

And there is hardly a drug store in the land which does not carry hundreds of them on its shelves.

## CHAPTER VIII

### MORE QUACKS AND CURE-ALLS

"Curiouser and curiouser," cried Alice.

THE modern medicine man as we have seen, functions almost exclusively behind the screen of brands and proprietary names. He shuns the light of day. His formulæ are secret or pretend to be. He trades on mysticism. While he is acknowledged king of astrologers, his method has been widely imitated. "The man in the car doesn't think about motor oil. But call it the Film of Protection, write it as a mystery story, and you have—a best seller"—thus an advertising agency announces the key to the technique. Lesser shamans in many other fields are weaving spells and compounding fetishes behind the walls of brands and proprietary names. Many examples have already been given in earlier chapters. Here we can but briefly examine a few more, with an attempt, necessarily limited in scope and facilities, to appraise their inwardness. Had we an American Medical Association in these other fields, the tally would doubtless be made more impressive. Preliminary research indicates a vineyard lush and rank.

As in the case of drugs, a large fraction of the non-medical proprietary articles on the market, have nothing more behind their "great discoveries" and double page spreads, than a simple recipe taken from the standard books to be found in every public library—Henley's *20th Century Book of Recipes*; Spon's *Workshop Recipes*; the Scientific American's *Encyclopedia of Recipes*.



"It is not chemistry that makes a piece of good neutral soap with no free alkali, a little scented nubbin worth 50 cents; it is art. Soap is soap, and very often the big yellow cake of the laundry and the scented 'thing of perfection' in the boudoir are made from the same stock." Moreover many of the French use American soaps on the ground that they are superior, while many Americans insist on French soaps. Is not the present great advertising campaign of Lux toilet soap built on precisely this superstition? Meanwhile—it is impossible to point out too frequently—soap is a *matter of chemistry*, not of golden words, or pictures of appetizing maidens, or hunches, or testimony of friends, or smells. If you like a smell well enough to pay a hundred times its cost, this is a free country. But if you are looking for good soap, any competent chemist can tell you how it should be made, what it ought to cost, and perhaps even where to find it. All the millions of words of soap advertising tell you almost precisely nothing. "Repetition is Reputation."

Meanwhile the liquid fly-spray brothers are urging us to use their products at \$4 a gallon (compounded mainly of kerosene) for cleaning mirrors, bath tubs et al, rather than straight kerosene at 25 cents a gallon.

An excellent silver polish can be made from:

whiting (prepared chalk)	30 grams
alcohol	45 cubic centimeters
Ammonia water	200 cubic centimeters

Simply whiting and ammonia mixed to a thin paste and kept tightly stoppered, will serve the purpose well. Compare the cost per pound of this exceedingly simple mixture requiring no work but the pouring together of the ingredients, with the price of silver polishes with fancy names sold along Main Street.<sup>1</sup>

Commercial grease solvents or "spot removers" advertised as being non-inflammable, usually consist of carbon tetrachloride mixed with benzine in such proportions that the mixture is non-inflammable. One of these sells widely in small bottles, at a price of 90 cents a pound, and the ingredients, which are simply poured together, cost less than 8 cents at wholesale.

Dr. H. O. Weller, late Director of Building Research in England, comments on the current list of patented building materials, containing some 700 names. A complete enumeration, he says, would run into thousands of names. "Why is there a market for these proprietary materials? There are two reasons, shortly indicated by two words: convenience and ignorance." He asks whether the architect ought to prescribe the equivalent of patent medicines. "Many no doubt honestly come to believe that a fancy name adds new virtues to otherwise ordinary materials. On large scale work an architect or civil engineer who specifies secret nostrums, is either not serving his client efficiently, or he is culpably ignorant." He tells of a certain material sold in London under one name as a timber preservative, and under another as a fire-proofing liquid. Northern customers bought it in drums and bottles under still a third name as an insecticide, and under a fourth as a limestone preservative. "This makes life," says Mr. Weller, "unnecessarily complex." Socrates would have agreed with him."

The dry-powder fire extinguisher is an old and costly nostrum. Not only is it largely useless for the purpose, but it postpones the application of really effective remedies. An advertisement reads: "Simplest, cheapest, quickest, infallible, and unfailing . . . will not freeze, cake, explode, or lose its strength . . . perfectly harmless . . . extinguishes any kind of fire instantly." The ingredients, sold

in paper or tin tubes for \$3 each, can be purchased in bulk for 10 cents. Such extinguishers located on the stage of the famous Iroquois Theatre had the effect only of delaying the application of useful fire fighting measures. Yet their advertising still continues. Expert demonstrators can perform wonders with a dry powder extinguisher on a fire made up in just the right way. But almost any kind of powder, or sand, would put out that kind of fire.<sup>3</sup>

During the past few years the Bureau of Standards has frequently tested so-called gasoline "economizers" for use on automobiles; devices admitting air to the intake manifold, above the throttle. A specious demonstration is possible by which the device may be made to increase the engine speed without changing the carburetor adjustment, thus apparently justifying the claim of increased power. Careful analysis shows that these devices do not improve the performance of the engine except in so far as the user, following instructions, will operate on a leaner mixture. Of course he should do this anyhow, in the interest of economy.<sup>4</sup>

A like practice is recorded in a paper before the Society of Automobile Engineers. When a certain carburetor was sold, the purchaser was advised at the same time that his ignition should be checked, the carbon cleaned out, and the valves reground. After this was done, the carburetor was carefully adjusted. The engine naturally performed as it had never performed before. The owner was delighted and paid his bill with gratitude. "The Accessory Sales Department made a profit, the Service Department made one on the installation and tuning up, and the owner was a booster for the carburetor. . . . The car probably would have performed equally well with the former carburetor," had the same tuning-up process taken place. This case brings to mind the much larger question of carburetor efficiency, and

its bearing on the 2 billion dollars a year the American people spend for gasoline. Dr. Dickinson, fuel expert of the Bureau of Standards, tells us that about 25 per cent of the gasoline which goes through the engine of the average motor vehicle is not burned, but remains as combustible matter in the exhaust.<sup>5</sup>

"Considerably more than half the cars built require no more serious alteration than a redesigned intake manifold to increase the miles per gallon by 20 per cent. . . . No large producer of automobiles has ever made serious use of economical operation as a sales argument, probably from the belief that the American public is not greatly interested in economy." This lack of interest may be true enough, but our concentration on body lines, dashboard jiggers and radiator caps is costing us in the neighborhood of \$400,000,000 a year.<sup>6</sup>

Oil salesmen showed customers micro-photographs demonstrating the basic difference between paraffin and asphalt-base lubricating oils. "At the same time this particular oil company was buying its crude oil out of pipe lines into which both paraffin and asphaltum oils were pumped." The engineer reporting the fraud ends with a remark which applies to many things other than oil: "If you had all the oil salesmen together you would find that the arguments flattened out."<sup>7</sup>

"Tests of carbon removers indicate that they tend to increase the deposit rather than to eliminate it, and in some cases show a strong tendency to remove metal from the cylinder-head as well." This from the Journal of the Society of Automotive Engineers.<sup>7</sup>

A vacuum bottle for keeping liquids hot or cold, emphasizes a type of construction which prevents breakage. Not only does this unbreakableness cost the purchaser four times what he pays for a silvered-glass vacuum bottle, but on test

the metal bottles lost or gained heat something like *eight times* as fast as did glass bottles. Here in its purest form is found that characteristic of advertising which emphasizes one feature, and fails to mention concurrent disadvantages. Four times the price, at one-eighth the efficiency, is something to be considered—as well as the matter of fragility.

The Federal Trade Commission finds low grade Swiss watch movements made with 15 to 23 jewels because of the American habit of judging quality by the number of jewels. It finds Siewin Hair Remover and Kilrute Lotion claiming to destroy the hair follicle or root, and so bring about a permanent removal of superfluous hair. The former has “no effect upon the hair follicle or root, and the hair will grow out again as quickly as if it had been removed by a razor.” The latter “will not do any of the things claimed for it in respondent’s advertisements.”<sup>s</sup>

The Royal Baking Powder Company after long warning the public against phosphate baking powder, changed, in 1919, its “Dr. Price” brand to a phosphate powder. The label on the can was substantially unchanged, but the word “cream” was put in quotes, and the grapes in the cornucopia picture were changed to flowers. The finding of the Federal Trade Commission is worth quoting for the sidelight it throws on brands and advertising:

“Prior to the year 1915, following a difference of opinion among physiologists as to the healthfulness of inorganic phosphate in food products, a Dr. Marshall published an article in the Journal of the American Medical Association which convinced the chief chemist of respondent [Royal Baking Powder Co.] that inorganic phosphate was entirely unobjectionable as a



baking powder ingredient. Respondent continued up to May 28, 1919, to publish and circulate disparaging advertisements concerning baking powders containing such phosphate.

"At the same time that it was warning the public against the use of phosphate baking powders and claiming that cream of tartar was the only healthful acid ingredient, respondent was engaged in manufacturing and selling in Canada, through a company controlled by it, a phosphate baking powder known as 'Magic Baking Powder'; and contemporaneously with its campaign of disparagement of phosphate baking powders, also owned 49 per cent of the capital stock of the Provident Chemical Works of St. Louis, Mo., a corporation engaged in the manufacture of phosphate for use in baking powders and in selling the same to manufacturers of phosphate baking powders, being sold in competition with respondent.

"In or about the month of July, 1919, because of the scarcity and increased cost of cream of tartar, respondent determined to change Dr. Price's Cream Baking Powder, which had been well known for 60 years as a cream of tartar baking powder, to a phosphate powder, and to conserve the available supply of cream of tartar for its other brands. Cream of tartar had increased in price until at the time it cost more than five times as much as phosphate."

Thus it would seem that the "goodwill" of the brand was more important than the conviction of the chief chemist, and it took the high cost of cream of tartar to bring about a change. Furthermore while the Royal Baking Powder was making one set of claims in its advertising, it was financially

interested in a product which ran directly counter to the claims. Neither product was bad. The price for each may have been eminently reasonable. The case simply shows the shifts, changes and misinformation which can occur when the consumer buys on the basis of a brand name rather than on the basis of specification.<sup>9</sup>

One concern registering 1,000 brands of fertilizers in one state, listed 74 for which the formula was identical. It was found that sales were easier to make when some bags were branded as good for potatoes, others good for corn, and so forth. The farmer felt that he was getting a favored mixture for a particular crop. Another company sold 3 grades of fertilizer under 34 brand names.<sup>10</sup>

Says Mr. John Dinsmore, in respect to the large class of chemical proprietary compounds for which inflated claims are made:

"There are, I suppose, some of these items on the market which are based on new and thoroughly sound principles, but I have never yet found one. Without exception a chemical analysis has shown that the so-called new and wonderful product was an old friend in new clothes and credited with virtues it did not possess."<sup>11</sup>

The following warning appears in the specification hand book of one of our largest automobile manufacturers. Note well its implication: "Persons considering use of trade-marked preparations should consult a testing laboratory."

### *Astrologers in radio*

Radio may be a luxury and thus outside our field, but we cannot forbear to give at least a sample of the learned hocus-pocus now running riot in the industry. We speak in part from our own technical knowledge.

"The radio industry will never be stabilized until its quackery is materially reduced, until its ball and bird cage antennas, its static eliminators, and concomitant freaks, grow rusty in ash cans, and the thousands of pages of publicity that have temporarily put them over are yellow with something other than jaundice. . . . There are a few—very, very few—sets (I personally know of only one) that pass a reasonable mark of all around excellence. . . . I have never seen a really fine set (electrically) that has not been spoiled by some cabinet genius from Grand Rapids."

So speaks an expert of wide experience in this field.<sup>12</sup>

There is certainly not more than one, out of the hundred or so American radio magazines edited for popular consumption, which requires its advertisers to confine themselves to the truth, even approximately. The news columns of many of these journals are full of the concealed advertising made famous in patent medicine days, before the Post Office Department ruled that an advertisement had to be identified as such. The regular advertising columns of radio journals moreover stupify one with their announcements of sensational new discoveries which on analysis are found to lie mainly in the field of philology. Advertisements which overstate, deceive, and exploit half-truths, are the rule rather than the exception.

Two years ago, one radio firm brought out a sensational new loud speaker,—perfection was at last attained—in the advertising. To-day, the wonder having proved a fizzle, the same firm is saying the same things about a loud speaker of radically different design. Another firm announces that true reproduction "is all in the overtones" and fails to mention the even more vital importance of the fundamental or ground tones. Meanwhile correct repro-

duction of the low fundamental tones is fraught with the utmost technical complexities; hence the virtuous insistence on the overtones, which come easy—almost too easy.

Here is a radio that "will operate a loud speaker over the whole United States, ordinarily, with four tubes. Using the fifth tube, any station on the continent can be brought in usually with excessive volume." This is an impossible claim, for the set that can fulfill either of these promises has not yet been built. Honest radio manufacturers will not claim sure reception even of stations within 500 miles radius. Here is a radio set, the Synchrophase, which makes the astonishing claim in the *Literary Digest*: "Its pleasing voice cannot be altered by loud speakers which lisp and distort." The loud speaker is always and everywhere a critical link in the chain of reproduction, and no set ever made can escape having its performance ruined by a bad loud speaker.

The expensive and elaborate "toroidal coils" over which great excitement took place in the trade two years ago, were finally tested by some curious-minded engineer, and found to be only about half as efficient as the simplest, cheapest type of coil possible to build. Some of the claims made for these new-day coils were really the disguised defects due to their electrical inefficiency, but the general reader can be absolutely depended on not to recognize them as such.

"We now know that a common bellwire solenoid coil wound on an oatmeal box is about as effective as any other inductance, or more so; but at that time the doctors knew better. These radio windjammers, writing at space rates, solemnly declared the solenoid to be a total loss. For the fifty-seventh time the hookup bugs tore sets apart and substituted Navajo baskets of insulated wire for the old solenoids, or laboriously

wound involute pretzel coils to keep the magnetic field from annoying its neighbors." <sup>13</sup>

Radio dealers by means of ingenious demonstrations are able to make 8-tube sets sound better and give greater volume than 5-tube sets *on local stations*, where the difference if any should be in favor of the set with the fewer tubes. Thus the buyer is made to believe that the more tubes the better the set, in proportion—which is excellent for business. Yet three or four tubes are all that are really required, to hear, on a loud speaker, stations at almost any distance from which reliable and pleasing reception is possible—if the design is efficient. By imitating automobile advertising with such terms as “balanced six” and “straight eight,” the radio dealer has made the buyer receptive to many more tubes than he needs—at a high maintenance cost per set.

Here is a widely advertised speaker which “delivers every sound all along the scale with full value, covers the whole range, captures even the most elusive notes within the scope of the set. Perfect volume and clarity are matters of course rather than unusual achievements.” Such performance is flatly impossible at the present state of the art. Here is a dandy little jigger that “banishes distortion once and for all . . . high tones come in clear and true; low tones come in rich and mellow. Ask your dealer.” If your dealer knows anything about the art and is an honest man, he will tell you that the whole advertisement is almost pure quackery; that nearly every claim is false.

In conclusion it may be said that only one thing is required of a radio set or a phonograph—faithful, accurate reproduction of music or voice as “heard” by the recording instrument. Such reproduction is still a long way from attainment in commercial instruments, in spite of the acres



of advertising to the contrary. It is possible, however,—and only one maker that we know of has had the courage and frankness to do this,—to publish curves showing quantitatively the *degree* of faithfulness of reproduction of music from the lowest to the highest notes of the musical scale. Such data are not based upon the enthusiastic and shifting opinions of auditors, musical and otherwise, but upon the impartial and reproducible readings of precise measuring instruments. When buyers demand exact information on the relation of sound energy input to energy output over a frequency range of 50 to 6000 cycles, a half billion dollars worth of radio sets and phonographs yearly will begin to emerge from Wonderland, and will cease to debase the public taste for music.

There is, however, this to be said about radio. Tens of thousands of amateurs are slowly, painfully, expensively, but with unlimited enthusiasm, learning something about physics. In time they may come to distinguish between the claims advanced in advertising and tangible performance as governed by the technical arts. This knowledge may some day serve them well in other fields.

### *Insecticides*

"I know you are a friend," the little voice went on, "a dear friend, and an old friend. And you won't hurt me, though I am an insect."

Insecticides and disinfectants, like medicines, paints and radios, offer a fertile field for quackery. It has been estimated that every year in the United States, two billion dollars worth of food is eaten by insects; and that the total waste is equivalent to the labor of a million men. It is a matter of some importance, accordingly, that reliable standards in insect extermination be set up, and the quack with his nostrums driven out.<sup>14</sup>

The Federal Insecticide and Fungicide Board was created to undertake this task. A single Government publication covers the results of scientific tests on 232 preparations from 54 species of plants, against 28 species of insects—totalling over 100,000 individual insects. The total research work of any insecticide manufacturer probably does not represent a fraction of the work underlying this single bulletin—which is only one of many bulletins. The Board and the Bureau of Entomology have thus done an immense amount of sound research, but the battle so far as the consumer is concerned is far from won. Said the Board in its 1924 report: "Some manufacturers instead of demonstrating the value of their preparations before offering them for sale believe that the purchasers should do the experimental work for them. . . . The fact that an insect can be captured and then killed by the application of a certain formula is no assurance that the insect will be harmed in its natural habitat by spraying the so-called remedy into the air, on the plant, or about the premises." Meanwhile we are sold "lice killers" with instructions to give them to chickens in their feed or drinking water! Naphthalene has been made up into magical "nest eggs," widely advertised to kill and repel lice and mites on chickens. Far from being killed or repelled, the lice frequently make themselves exceedingly comfortable on the nest eggs—which are harmless to lice and very injurious to chickens.<sup>15</sup>

Insect powder made from chrysanthemum flowers (pyrethrum), is widely adulterated with daisy flowers. Pine oil and paradichlorobenzene have been extensively sold as general disinfectants under fancy brand names, whereas the first is effective only against bacillus typhosus, and the second is effective against no germs at all. Sweeping compounds, made usually of fragrant colored sawdust, are sold as having the properties of both disinfectants and insect-

killers. The Government has, to some extent, stopped such fantastic claims on the labels, but the advertising has not been checked. Enterprising manufacturers have capitalized the public interest in medical antitoxins and vaccines, and proceeded to compound totally worthless methods for the treatment of trees by injecting chemicals under the bark, or into bored holes. Such learned therapeutics, says the Department of Agriculture, not only have no effect on diseases, but frequently kill or injure the tree.

An orchard near Washington was damaged to the extent of \$5,000 by using a widely advertised insecticide, precisely as the label directed. Another favorite article caused the death of over 400 young apple trees. Neither preparation controlled the insects or diseases for which it was made and recommended. The preparations are still sold, but the Government has stopped the misbranding (in interstate trade).

Moth controlling agents, costing ridiculously small sums to make, are marketed at gross profits on the cost of ingredients ranging from 2,000 to 200,000 per cent. A whole family of these nostrums revolve around the principle of filling a closet or bureau drawer with an exhalation presumably obnoxious to moths. None of them are effective under the conditions for which they are recommended. One of the family advertises: "Absolute protection from moths—perfect security for your clothes." This fairy story is sold and recommended by large and reputable department stores. A single store sells nearly \$30,000 a year of another brand of insecticide the claims for which verge on the fraudulent, and which is woefully ineffective.

Many new houses are being built with cedar clothes closets. They are of little if any value. If you really want to know how to control moths or their larvae effectively and at a reasonable cost, send for the Department of Agri-

culture's Bulletin 1051. The Department's scientists list 18 effective methods, most of which are cheap, simple and safe; but in every case you are warned of the limitations of the process, and given the precautions necessary to assure success.

The federal Government's work on insecticides does not of course cover products sold intrastate. There are local laws in 19 states, most of them largely ineffective. As a result one finds in nearly any department store, seed store, or ten-cent store, insecticides and disinfectants whose labeling misrepresents and misleads. Labels which claim *combinations* of properties and uses—such as both cleaning and disinfecting—should always be regarded with suspicion; likewise labels which just fail to make definite statements regarding effectiveness against certain insects or bacilli, but seek to imply potency by talking all around the question. Labels not giving the percentage of inert ingredients have often not been manufactured under the requirements of the federal act. If you want to *know*, rather than to take a chance, write the Department of Agriculture for Farmers' Bulletin 926 on disinfectants, 658 on cockroaches, 627 on house centipedes, 754 on bedbugs.

### *A contrast*

If radios and insect powders are lush with quackery, there are three industrial areas which can be set over against them; where the arts of the spell binder are at minimum. They warrant our attention, for they show how well industry can serve the public when circumstances are propitious.

First there are those goods which are marketed predominantly to professional people—surgical instruments, microscopes, surveying instruments, and the like. In this field there is not a case so far as we know where the intervention of the Federal Trade Commission, or other regulatory body,

## DISINFECTANT AND INSECTICIDE CASES

<i>Product</i>	<i>Manufacturer or dealer</i>	<i>Nature of Complaint</i>	<i>Finding</i>	<i>Disposition</i>	<i>Reference: Insecticide and Fungicide Board Notice of Judgment Number</i>
Chloro-Naptholeum Disinfectant	West Manufacturing Co., New York, N. Y.	Misbranding	Contained neither chlorine nor chlor-naphthol as essential ingredients. Would not oxygenate the air as claimed; was not non-poisonous and harmless as claimed.	Condemnation and forfeiture Plea of nolo contendere. Fined.	115 94
Magic Sticky Tree Cord	Alto Mfg. Co., Louisville Ky.	Misbranding	Was not effective as claimed in preventing ascent of caterpillars, gypsy moths, etc.; and in protecting trees against insects; did not remain sticky 3 to 4 months as claimed.	Plea of guilty. Fined.	424
Glidden No-Fly	A. Wilhelm Co., Reading, Pa.	Misbranding	Product not effective against chicken lice as claimed; and contained inert substance not declared on the label.	Plea of guilty. Fined.	772
Glidden Dry Powdered Arsenate of Calcium	The Glidden Co., Cleveland, Ohio	Adulteration and Misbranding	Product did not conform to declared analysis; was not harmless to crops as claimed; and was not effective against insects to the extent claimed.	Plea of guilty. Fined.	780
A. D. S. Roach Powder	American Drug-gists Syndicate, New York, N. Y.	Adulteration and Misbranding	Product did not conform to the declared analysis; short-weight packaging.	Plea of guilty. Fined.	900,



Camphorated Red Cedar Compound	Cresol Chemical Co., New York, N. Y.	Adulteration and Misbranding	Product did not contain camphor and was not a mixture of red cedar chips and naphthaline. Various statements on label, "The best moth destroyer. Sure death to moths and all small insects. . . . superior to all so-called moth preventatives or destroyers," found false and misleading.	No appearance. Product ordered destroyed.	167
Pioneer Quick Fly Exterminator	Pioneer Quick Fly Exterminator Co., Denver, Colo.	Misbranding	Exterminator declared by maker to be slightly poisonous, but harmless for external use. Actually extremely poisonous and extremely harmful for external use. Labeling not in conformity with law in two other respects.	Plea of guilty. Discharged.	90
Mosquitone	McKesson & Robbins, Inc., New York, N. Y.	Adulteration and Misbranding	Contained inert matter in excess of the kind and amount declared; claimed to contain "a mosquito repelling agent which is odorless, and therefore does not need the addition of strong oils like Citronella," whereas it did not contain any odorless, repelling ingredients but did depend upon strong-odored oils for its efficiency.	Plea of guilty. Fined.	1017

has been called for. The professional man, being used to dealing in exact fact, turns a cold eye on the Men of Vision, with the result that the surest way to prevent him from buying is to hint at merits beyond the bounds of plausibility. Imagine the skin soap gentry hurling their broadsides at the dermatologist; the insecticides advertiser assailing the entomologist with fairy tales of "no more moths."

For advertising which really informs and so fulfills a useful economic function, look through a copy of *Science*, or the *Physical Review* or the *Scientific Monthly*. These magazines cater to professional men almost exclusively. Here for instance, is a copy of a page advertisement in *Science*, for November 12, 1926: First comes a picture of an instrument; not an impressionistic picture but an informing one.

Zeiss Abbe Refractometer.

Range  $n_D = 1.3$  to  $n_D = 1.7$ ; accurate to within about two units in the 4th decimal. With heatable prism. Complete in case with thermometer, and dispersion table.

Price \$222.00 f. o. b. New York.

The above tells exactly what the scientific man wants to know about a refractometer if he is in the market for one. There is no attempt to make him yearn for an article that he cannot afford, for the price is given. The statement of accuracy is a real contract upon which the buyer can obtain refund if he finds the instrument not up to the claims.

A second field which is conducted on a high plane is that which reaches the *amateur*—particularly the serious and cultivated amateur. There is hardly a line of merchandise in which the advertising is so reliable and useful, and the

calibre of the salesmen in the specialized stores so informed and informing, as for instance, in the camera trade. Your real photographic amateur prefers no picture at all to a poor one, and the better photographic stores support him effectively. In many lines of business the sale of second hand goods is relegated to pawn shops and like inferior establishments; in the photographic trade the best stores do a thriving trade in second hand cameras, lenses, and shutters, with obvious advantage to all concerned. This is a business in which it is not considered expedient to disparage all but the models just incubated, and furthermore one in which a guarantee is a guarantee.

A third field where goods afford dependable value for money expended are those industries where either accepted specifications exist and are generally recognized by producer and consumer; or where, on account of the simplicity of the product and its well known qualities and uses, little advantage can be gained by misrepresentation. Simple drugs and chemicals for instance can be purchased without much blowing of trumpets, because the United States Pharmacopœia has largely removed the competitive moonshine. If the Epsom salt, petroleum jelly, quinine, or fluid extract cascara, is up to the Pharmacopœia's requirements, it is good enough for anyone, and safe to use.

Practically all producers make Portland cement, where the large user is concerned, in accordance with one national specification, and thus cement is unique among building materials in the freedom of its advertising and salesmanship from competitive claims of quality. Sugar is mostly uniformly good and dependable as to purity and sweetness, and hence retails at a figure singularly low in relation to its manufacturing cost. Coal, pencils, ink, paper, ice, tincture of iodine, are largely in the granulated sugar class, and attempts to bring such items into the realm of a double page

spread, often result in a balloon that never gets off the ground.

But if we take plain sawdust, color it green, add a little of the cheapest possible petroleum oil and a synthetic peppermint smell, we have a sweeping compound capable of moving mountains. We can build up good will values for it on the strength of an advertising campaign, following the concoction of an appealing name and slogan that will individualize green sawdust in the housewife's mind.

We are told by economists, and we know from our own experience, that the price of many goods is determined not by the cost of production but by what the traffic will bear. The brand system supported by able advertising helps the traffic to bear more than it possibly could if mystery and wonder were not in the picture. Man does not live by bread alone. Mystery and wonder are implicit in his psychological make up. But do we want it in soup, plaster, wall board, soap, fertilizers and bug killers? Or shall we take it in less expensive doses in detective stories, the drama, poetry and fairy tales for children?

The brand system attempts to obtain the following advantages for merchant or manufacturer.

1. To stamp in the mind of the buyer a name or package which represents a group of merits that will make it easy for the buyer to order the same thing next time.
2. To furnish the necessary link between advertising and the goods for which the demand is being created.
3. To afford a concrete medium for the good will of the producer and dealer.

There is little doubt that under a simpler system of advertising and selling, particularly one of local rather than

of national extent, the brand system fulfilled functions of value not only to the producer, but to the merchant and consumer as well. With the coming of high pressure salesmanship, national advertising, and the enormous diversification of varieties, this simple picture fades, and manifest disservices to the community make their appearance. Let us summarize them briefly.

In the first place, the number of brands having substantially identical characteristics tends to grow without limit so long as advertising pressure is capable of creating demand. Witness the great tooth paste drive. America, having been made mouth-conscious, a new paste appears on the market almost weekly. Likewise the multiplication of brands occurs because new names are needed to provide "exclusive agencies" for dealers. The farmer who buys stock feed that proves unsatisfactory, changes his brand, and obtains the same thing under a different name from another exclusive agent, and ends just where he started.<sup>16</sup>

In the second place, with the growth of the technical arts, the product can be made so complex that the consumer cannot hope to break it down into known principles and materials, and is helpless before the claims advanced. The limits of the fantastic have moved sharply upward, and no man, save the expert scientist, can know how far.

In the third place, advertising being the able technique it is to-day, it is possible to take simple goods, such as soap or cereals, and surround them with a halo of characteristics which are either non-existent, or of no consequence, but which sound like galleons from Cathay.

In the fourth place the brand name is no guarantee that the buyer receives an identical product. New brands of cigarettes put upon the market are said to lower their



quality after sufficient demand has been created. Formulas are continually shifting.

In the fifth place, brands tend to break down basic distinctions of weights and measures. The package is substituted for the pound—as we have already noted in the case of Sanka coffee. Breakfast foods sell as high as 68 cents a pound in package form. And bran, a waste material at \$20 a ton, comes to us neatly packaged at \$1000 a ton.

In short, the brand system as it operates to-day attempts to break away from that keen price competition which usually accompanies the sale of simple, known, materials, and to build up a monopoly based on unknown quantities, governed by ghostly and magical laws. All this reflects commendable astuteness on the part of the Men of Vision. But the trouble is that there are altogether too many Men of Vision. Many of these praiseworthy magical monopolies never materialize. And the net effect is to shift competition to new, more complicated, more bewildering, and infinitely more costly levels. In which, by and large, *manufacturer, dealer and consumer* gain nothing and lose much.

“The final purpose of advertising is not to prove the comparative superiority of the article in competition. The object of advertising is to TAKE IT OUT OF COMPETITION, that it will no longer be compared but will be accepted by the buyer.”

The above is from an advertisement in *Time*, of a famous advertising agency. It shows with brutal frankness how magic rather than information is the goal of modern salesmanship.

Probably the greater part of branded merchandise now sold is untouched by quackery so far as the basic physical product goes. But in the confusion of sales pressure, quackery tends constantly to come into the picture by reason of

inflated and technically unwarranted claims. Meanwhile the temptation is great to adulterate, cheapen, weaken, or change the quality of the basic product. The consumer is too bewildered ever to be the wiser. He has long since been de-educated to the point where he has ceased to know things by their real names.

Some day when intelligence triumphs over wizardry we may have a new kind of a brand. It will be added to the name of the maker and his identifying mark, and it will say in effect:

This brand identifies an article representing the result of controlled manufacture under an expertly devised specification. (No.....; Issued by.....\*) It is subject to regular testing and inspection to see that the specification is complied with.<sup>17</sup>

\* Some public body or other impartial authority.

The specific examples cited in the last four chapters have doubtless been driven in until they hurt, or what is worse until they bore. But if we thought the reader could stand it, we would like further to illustrate our point with the unlimited material still at hand. We restrain the desire, and go on to a consideration of standards—of which the new kind of brand mark cited above is one symbol—and the cardinal importance of standards in protecting the consumer.

## CHAPTER IX

### STANDARDIZATION—GOOD AND BAD

The lion looked at Alice wearily. "Are you animal—or vegetable—or mineral?" he said.

THROUGH all the foregoing chapters has run the implication that somehow, somewhere, there was a right way to make goods, and a right way to judge them when buying. The implication has not always been clear, it has been clouded from time to time with other considerations, but it has always been there—like the shadow which follows one on a sunny day. And now the authors are faced with the task of converting that shadow into reality. What, specifically, are the yardsticks which give us authority to pass judgment on Wonderland; to lay strictures on great classes of goods created and distributed with incredible human labor; and above all, to promise the consumer better goods at lower prices?

It is no mean challenge. As the massed cohorts of salesmen, advertisers, shopkeepers, thunder their protesting chorus, it takes bolder men than we to maintain that the touchstone has been found which invariably marks off the gold from the dross. But we have, such as it is, a yardstick. It is time that it was described in some detail, that the reader may judge its soundness for himself. The going name for it is industrial standardization.

The word "standardization" is in very low repute in some quarters, and often rightly so. Defined in certain ways it means depressing, even terrifying things. Indeed it means

altogether too much. It should be broken down into half a dozen words, each with a more specific and accurate definition. Mr. Hoover's term "simplification" is a step in the right direction. If it is said that we want to introduce more standardization into American industrial life—just that and nothing more—we will be met with the legitimate protest that Americans are already over-standardized. As indeed they are. What we argue for are more standards in certain things, to the end that there may be less standardization in general living. Specifically we advocate technical standards for all manner of intermediary industrial processes, standards to take the magic out of buying (in necessities at least), standards to eliminate untold complexity, confusion and waste, and so relegate industry and business to the place of servant, rather than master. For many final products, standardization of pattern is intolerable. Imagine the scene if all men and women wore identical uniforms. For the employment of leisure, when the machine has been made our servant, standardization in habit, speech, opinion, is again intolerable. But it so happens fortunately that when men are economically free, individuality flourishes.

Mrs. Carleton Parker states the case: "I can't see but what the nation as a whole would suffer no great psychological repression if everyone had to use all 21-inch sewer pipes instead of some 22-inch pipes, but I don't want all ladies wearing the same hats." What the authors are interested in, broadly speaking, is pipes—not hats.

There are no less than 600 sizes and varieties of fire hose couplings in the United States. In the great Baltimore fire of 1904, railroads cleared their tracks to bring fire apparatus from Washington, Philadelphia, New York, but the hose which they brought could not be connected to the hydrants, and their equipment stood idly by while Baltimore burned. One railroad to-day has to carry in stock 29 different non-

standard hose couplings with special fittings and "adapters" to link up with the fire apparatus of the various cities and towns in which it has property. Whose individuality is going to suffer when this job is standardized? <sup>1</sup>

The Dutch shipbuilders of the 17th Century were the founders of industrial simplification. They built parts of ships in different ports, and then brought them together at one assembly point. This is the first known instance of interchangeability in manufacture on a large scale. The earliest technical standardization in the modern sense was done in about 1880, when a definition was made in the definition of the electrical units which are now accepted throughout the world. As a result of wide coöperation between the laboratories of the various nations, these units were well established by 1911. There are now fixed values the world over permitting the costs of production of electrical current, and the efficiency of electrical machinery to be compared with the greatest precision. This work is carried on with increasing refinement by the International Electrotechnical Commission.

In the old days the output of a 10-horse power motor of one manufacturer might vary as much as 30 per cent from that of another—giving rise doubtless to lively sales appeals to the consumer to buy the 10 horses that were really 13 horses. . . . "Our motor can outpull any other motor on the market." With no yardstick, magic and persuasion held the field. Now 10 horse power is 10 horse power, measurable and definite the world over. Unfortunately there are still differences in the standards of candle power used in illumination measurements, which run as high as 5 per cent.

In the early days of mass production in the electrical industry, the idea was current that every company should show its independence and originality by bringing out com-



plete electrical systems as different as possible from all others, with the various components completely non-interchangeable. This fantastic mess has been cleared up. We need a like clearing in scores of other industries where indefiniteness still predominates.<sup>2</sup>

The 21-inch sewer pipe was first produced by a manufacturer who wanted to be in a position to shade a price on a contract that nominally called for a 22-inch pipe. "Fourteen-quart" pails actually hold only 12 quarts. Left hand plows are a regular item of production, because some farmers feel there is a peculiar and occult merit to a plow that turns the furrow to the left. One firm produces two lines of plows that are identical except for the color of the paint; some farmer buyers sagely insist that the red plow possesses ghostly virtues that are absent from the blue one.

In 1883, there were 50 varieties of railway time in the United States, usually determined by the local time of the city in which the headquarters of the road were located. Up to that year—lamp, hand, whistle, bell cord and flag signals often had exactly opposite significances on different railroads using the same station. To-day there is one standard time and one standard code of signals. In 1882, 56 different kinds of axles for box cars had to be kept in stock for repair purposes; but by 1891, the number had been reduced to 5. In 1882, 26 different couplers were required; in 1891 but one. Brake shoes and brake heads were reduced from 20 and 27, respectively, to one.

Electric lamp sockets and bases form one of the most noteworthy illustrations of industrial standardization. Once there were no less than 14 different methods of holding lamps in their sockets, and at least 26 different lamp bases. By 1900, 70 per cent had come to be of one type, and now there is practically none but the Edison base in this country. Only three frequencies persist from the nine which were

once in use. But motors for driving ventilating fans are still in the wilderness. One manufacturer lists no less than 3,000 different ratings for a single voltage, direct current service, in sizes ranging from  $\frac{1}{2}$  to 50 horse power, and speeds from 90 to 1050 revolutions per minute. When to this is added the extra ratings needed for two other common voltages, plus those for alternating current of several different characteristics—you arrive at an almost incredible number of different motors required to be kept in stock, or manufactured at short notice.<sup>2, 3</sup>

The war provided a tremendous impetus to industrial standardization the world over. Things had to be done too quickly to allow the normal amount of selling talk. Wastes due to foolish diversity and unknown qualities and dimensions were intolerable. One striking piece of common sense was the development of the famous Liberty airplane motor. Its parts were made in several plants at great speed, using standard cylinders, pistons, valves, cam shafts. Thus the parts of a wrecked or defective 8 or 12-cylinder engine could be used for the repair of other engines, and a new engine if necessary could be assembled from parts of wrecked machines. To-day a firm in Sweden builds motor boats whose engines have their principal wearing parts interchangeable with Ford parts, supplies of which can be secured nearly everywhere. What a boon the practice of interchangeable parts would be if extended to fountain pens, stoves, typewriters, and radio apparatus with respect to details whose differences are of a gratuitous and non-essential character.

One of the most important fields of standardization does not relate directly to goods but to *methods* used in manufacturing and in transportation. The National Safety Council and the various insurance interests, are coöperating with the American Engineering Standards Committee, in

setting up safe practices. They are erecting standards for the correct method of guarding workmen against machinery accidents, and all manner of special hazards. The mining interests are coöperating also in an extensive program of safety regulations designed to reduce the danger to the miner. Thousands of unnecessary traffic accidents have occurred through lack of uniformity in traffic lights and street signals. A nationally uniform code is now being devised which will give both the pedestrian and the motorist some chance of surviving in New York City traffic if he has mastered the practices of Seattle, Washington, or Portland, Maine. What does a citizen lose precisely in spiritual and aesthetic values when he gives up the right to be needlessly mangled?

Many of the grosser industrial wastes are due to traditional methods persisting in fields where exact knowledge is available, ready to be crystallized into standards and specifications. It is reported that in England the machines used for manufacturing bolts, are of a type practically identical with those used 40 years ago. Such machines are capable of producing only 2000 bolts a day, while American machines produce 30,000 to 40,000 bolts a day. The size of head used on English bolts has never until very recently been studied to determine how large it really ought to be to provide the necessary strength and gripping power for a wrench. An incalculable total of goods have grown up to their present form and dimensions in exactly this hit-or-miss fashion.\*

Who knows what the spacing between lines on a typewriter should be in order that maximum legibility with minimum waste of space and of paper may be secured? Of one thing we can be certain—the present spacing system, uncritically adopted by typewriter manufacturers, is thoroughly unscientific. When a rational system is worked out,

the line spacing ratio instead of being 1:2:3 units, will be more of the character of  $1:1\frac{1}{2}:2$ .<sup>5</sup>

A housewife needing a sewing machine needle in an emergency, might as well look for one in a haymow as on a neighbor's machine. Such needles are made in nine diameters—from 65 thousandths to 81 thousandths of an inch; and in lengths varying by as little as one thirty-second of an inch. A variation of a thousandth of an inch in diameter will keep the manufacturer from filling an order from stock. Some size numbers run from 0000 to 10, others from 1 to 8, others from 5 to 27. In some systems, number 5 is the large size, and in other systems the small size. Worse still, no one knows except by experience what needles will fit what makes of sewing machines.

An inexperienced housewife can seldom be sure what width of cloth she is going to be able to buy. There seems to be every width from 27 inches to 54 inches. Ribbon widths vary likewise, according to an inscrutable series. Does anyone know how to designate an ordinary pin just larger than the size most commonly used? No such simple method as giving the length in inches or millimeters has ever been applied to most articles of this nature.

Surely free citizens should have a right to as many different shapes and sizes of eyeglass lenses as eye size and esthetic appeal may require, but it is equally certain that the sizes and shapes should be kept within finite and rational limits, and that the screws of one frame should fit another. One principle always applies: *there never need be made more sizes and shapes of a given thing than can be distinguished as such by the user*. For example, there are, or were until recently, a practically endless number of American flag sizes—surely a standard object from the standpoint of design. Yet as a practical psychological fact, there is no sense in having flags less than 10 per cent dif-

ferent in size, for the eye is not able to recognize one flag seen at a distance, as differing from another unless there is at least a 10 per cent variation. Likewise shades of color to have artistic significance must be distinguishable one from the other.

One manufacturer stocks 2500 varieties of women's handkerchiefs. Would not a buyer have a better chance to secure what she wanted in a stock of 25? A hundred times as many can only lead to confusion and bewilderment—definitely increasing the difficulties of making a choice.

Who knows or can readily find out the recognized sizes, widths, lengths, or quality of umbrellas, writing tables, door locks, lamp wicks, rubber bands, hooks and eyes, buttons, napkins, tape, braid, garden hose, shingle nails, upholstery tacks, valve handles, window frames, stove pipes, washers, bottles and corks, sheets, strings for musical instruments, wire cloth, sectional book cases, illuminating gas? They are all in Wonderland.

But progress is being made. Following the arresting experience of the war, the movement toward simplification has been well organized, and is accomplishing tangible results. Three agencies in America are coöperating in the field: the Government services, particularly the Division of Simplified Practice of the Department of Commerce under the leadership of Mr. Hoover; the engineering societies and certain of the more progressive industrial trade associations headed by the American Engineering Standards Committee; and thirdly, a heterogeneous group of trade associations, mainly of manufacturers. No less than 20 countries are promoting standardization work, nationally organized.

In the single matter of reducing superfluous varieties and styles, the following table bears impressive testimony to the annual savings claimed by Mr. Hoover in certain fields of



simplification. Yet this is only a fraction of the total accomplishment.

<i>Field</i>	<i>Varieties Reduced</i>		<i>Estimated Annual Savings</i>
	<i>From</i>	<i>To</i>	
Paving Brick .....	66	4	\$1,000,000
Sheet-steel .....	1819	261	2,400,000
Reinforcing-bars .....	40	11	4,500,000
Range-boilers .....	130	13	5,500,000
Business forms .....	4500	3	15,000,000
Warehouse forms .....	3500	18	5,000,000
Builders' hardware from 74 to 29% reduction			10,000,000
Lumber yard sizes 60% reduction			250,000,000
Total estimated saving			<hr/> \$300,000,000

For better or for worse, modern industry has entered the field of mass production. The fact that such production has succeeded in deluging us in part with a great stream of cheap and nasty goods, does not damn the technique: it only damns our stupidity in permitting such a stream. Properly controlled, it is a magnificent technique. But it demands standards to measure the output in terms of utility and quality. Such, over great areas, have been missing. It is for them that we are arguing; they constitute the systems of reference, the yardsticks, that underlie every sentence in this book.

Mass production has given us Ford tractors, electric light bulbs, harvesting machinery, structural steel, dollar watches, and many other excellent things. It has the possibility of increasing the volume of excellence almost without limit. Many articles it can produce better than handicraft could ever hope to. Not cheaper, and in greater volume, but *better*. A custom-made tungsten lamp would not be superior to one made by mass production—it would be distinctly worse. Copper wire made by handicraft methods would not be fit for use in your telephone. Its diameter, surface

finish, resistance, uniformity, and quality of insulation, would all be woefully below the tolerances of mass manufacture.

Mr. Lewis Mumford, the distinguished architectural critic, has no quarrel with mass production from the artistic standpoint, provided that it keeps to its own side of the bed. So long as its output takes the simple form of the use to which it is to be put, it is usually welcome, and often beautiful—with the beauty of stark utility. But once this form is corrupted with irrelevant attempts at ornament—papyrus leaves on the bases of electric heaters, curly-cues on lighting fixtures, Corinthian flutings on wrought iron reading lamps, oriental rug patterns on linoleum, bulbous excrescences on Grand Rapids furniture—beauty clutches economy by the hand, and they disappear together.

Mr. Mumford tells of buying, some years ago, a machine-made electric reading lamp stand. "It was a slim iron rod with three gracefully curved legs welded on at the bottom, and a simply bent adjustable arm which held the lamp and shade. Except for one or two bends too many on the lamp arm, the thing was perfect. It is one of the few articles of furnishing in the modern American home which has spontaneously drawn a word of praise from every European architect to whom I have shown it."

But observe what has happened. "The sad defect of these beautiful lamp stands is that they were cheap. They could not in their severe beauty, be priced at much more than three dollars; even superadvertising could not have brought a greater price. At this point the Higher Aesthetics came to the manufacturer's rescue. He began draping melancholy iron leaves over its naked shape; he put a scroll of folderol as a pinnacle; he dressed it up in meretricious Corinthian flutings and pipings . . . and as a crowning touch added a silk and lace lamp shade, warranted to catch the dust and

require frequent renewals. In short, the slender iron virgin of the machine had become the blousy prostitute of the salesroom, decked out in paint, gilt, and finery to hide the shoddiness of every line." And the price was fifteen dollars instead of three. Selling points, and the artistic blindness of the consumer, have been the chief corrupters of mass production from the aesthetic standpoint. If left to itself it cannot only make many things better, it can even make them beautifully.\*

In industries where the threat of public danger is sufficiently dramatic—in railroad equipment and signals, the time pieces carried by trainmen, traffic control, fire fighting apparatus (except hose sizes), ocean traffic, the generation of electricity, and public utilities generally—standards, as we have seen, have been erected to control the manufacturing output. We argue for an extension of the method to other industries. Drama may not be quite so obvious in food, shelter, clothing, medicines, but as we have demonstrated in the foregoing pages, in the absence of standards, tragedy all too frequently lurks there; while the volume of sheer waste, confusion and loss, staggers the imagination. Says the American Exchange National Bank:

"Great as is the annual waste through preventable fires, it is small compared with the annual waste resulting from the reckless employment of capital in the production of varying sizes and styles of essentially like things. . . . We are told that under standardization women would all wear hats of the same design and coloring, that all clothing would be cut to a uniform pattern, and that in a short time we would all be living a routine existence—moving about in regimented masses to the best of time clocks. The term standardization

as [here] applied, has no such significance as that. . . .”

What is its significance then? There are six specific sorts of standards which are required to control the output of mass production in the interest of sounder and more useful goods.

1. *Standards of quality*, such as are to be found in specifications for cement, cold rolled steel bars, sheeting, fat content in milk.

2. *Standards of size and form*, for screw threads, bolts, nuts, sewing machine needles, pins, ribbons,—even flags.

3. *Standards of length, mass, time, temperature*—the creation of uniform meanings for a gallon, a pound, a yard. (Incidentally the metric system promises the elimination of vast waste in this one field.)

4. *Standard ratings*—the creation of uniform meanings for a horse power; a speed rating for locomotives.

5. *Standard of practice*—such as a construction specification for erecting a steel bridge.

6. *Standard nomenclature*. If the radio industry possessed this single factor to-day, the magic in such words as “rejectivity,” “isolated power principle,” “razor-edge selectivity,” would be completely deflated, to the great benefit of the consumer.

What is there here to alarm even the most esthetic? The list does not include standardized machine tending, tabloid reading, moving picture plots, or any human regimentation at all. It includes no rigid standardization of articles for ultimate consumption, except in so far as indistinguishable differences are concerned, and except as to goods bought solely for their utility—such as ink, nails and paper clips. It does include a technique—the specification—for evaluating the *quality* of products for ultimate consumption, and

so guaranteeing the consumer that he gets what he wants every time he orders it—that particular article—nothing else and nothing less.

In brief, we advocate standards for all industrial products and processes short of the final article for ultimate use or enjoyment—standard weights, measures, ratings, nomenclature, machine parts, building materials—engineering specifications. We advocate safety standards for traffic control; the elimination of industrial accidents. When the industrial psychologists know more, we would like to see their findings incorporated into standards to protect the worker against fatigue and excessive monotony. Already sound work has been done on the importance of maintaining the sense of rhythm in industrial labor.

In articles for final consumption, we advocate standards to eliminate meaningless variations. Is there really any sense in having 278,000 types of men's sack suits; 6,000 varieties of single-bit axes; 78 sizes of bed blankets? No more types or sizes than the senses can readily distinguish is the acid test. We advocate standards of performance, quality and dependability for all end products—except for those luxury goods which are bought primarily for conspicuous consumption. There is, we suspect, far less goose-stepping in this program than advertising now actually forces us to undergo.

A woman moves into a new house. For a month the confusion is sublime—furniture to be shifted about, pictures to be hung and rehung, kitchen utensils to be stowed here and there, rugs to go down, curtains to go up, storage space organized, a time table worked out for the comings and goings of the children. Is it claimed that human values are lost and soul-destroying regimentation introduced, when this job is standardized? Ask any mother. And so with industry. Reducing styles to the number in reasonable



demand, reducing processes to the minimum of duplication and friction, setting up exact rules for testing and inspecting the final output—clears up the shop so that mass production may really function in the interest of more goods at lower cost; so that management may have some peace of mind to go on to research and improvement. Standards are the ratchets which catch and hold progress. In the words of Mr. C. E. Skinner of the American Engineering Standards Committee:

“I am convinced that engineers . . . have no more important work to do than to bring about reasonable standardization in practically every line of engineering and manufacturing. By reasonable standardization I mean . . . making possible mass production and straight line loading of mills and factories everywhere producing goods which are used in considerable quantities. Reasonable standardization will not hamper development and application to new fields, or the use of new processes or new materials which show a distinct advantage over those already in use.”<sup>8</sup>

Mr. A. W. Whitney of the same Committee, goes even further:

“Standardization is the liberator that relegates the problems that have already been solved to their proper place . . . and leaves the creative faculties free for the problems that are still unsolved. Standardization from this point of view is thus an indispensable ally of the creative genius.”<sup>9</sup>

Which is as it may be. But of this we can be sure. If the market is without standards, the consumer in ignorance, and the new competition in full control, the manufacturer has to lay aside this program of doing his job the right

way. He must think up a slogan, lard the bank balance of an advertising agency, shift his styles, paste on meaningless excrescences to provide selling points, vamp up annual models, resort to magic, and generally insult the rules of workmanlike production. One may be sure that many a manufacturer does so with a sigh. . . .

## CHAPTER X

### THE CONSUMER'S STAKE IN STANDARDS

"Oh, I'm not particular as to size," Alice hastily replied, "only one doesn't like changing so often, you know."

BOTH the intermediate and the ultimate consumer stand to reap great benefits from the standardization and simplification described in the last chapter. Nor will the benefits be offset by reducing consumers to the one dead level of automatons. By eliminating the bulk of gratuitous, non-informing, high pressure advertising and salesmanship, we suspect that one of the chief forces acting in the direction of the wrong kind of standardization, will be removed. When the new competition links a whole trade in the single imperative of providing us with Klassy Koats, Knobby Shoes, mechanical pianos, movies not above 12-year old intelligence, mouths filled with scented chalk, we tend to walk in a groove that the standards which the authors have in mind would not encourage. Consider the standardized scares with which we have been mass-impregnated during the past few years—pyorrhea, halitosis, lack of culture (remedied by 15 minutes a day), deficient personality (provided in 10 easy lessons, send-no-money), and above all, the massed scares of the patent medicine brethren. Under impartial scientific testing most of such scares simply could not exist; they would be dissected, debunked and dissolved. Science is the implacable foe of quackery.

A journal of the American Medical Association does not believe that a very widely advertised make of tooth brush

is scientifically designed from the standpoint of mouth hygiene. Yet behind the size and form of the brush as it now stands, there lies the mountain of gold which was required to invade and capture the tooth brush market. The company must stick to that design on the penalty of damaging its market, if a change, either for better or for worse, is introduced. Similarly, a favorite household oil, having driven the smell of citronella into the consumer's consciousness, must go on using citronella even if it were proven to be the worst thing possible for a lubricant. To change the smell would jeopardize the whole great advertising investment. Time and again end products have been standardized on the basis of irrelevant or positively injurious selling points deliberately designed to catch the consumer's uninformed eye. These the manufacturer cannot afford to change. The Proctor and Gamble Company in a letter to one of the authors state that "99  $\frac{4}{100}$  % pure is a slogan and not a guarantee." It was based on analyses made in the early 80's when soap chemistry was a less exact science.

The kind of standards here advocated would never have permitted blind alleys of this nature. Millions in good will could not be built up on the strength of faulty design, dubious quality, linked to appetizing smells, and a bright nickel finish. With quality first set and approved on the basis of standards which protected the consumer, the technique of advertising might then come into play as brilliantly as it wanted, to foster wider distribution. In such a case, advertising would carry a true educational message and so fulfill a useful function.

The sad thing about the wrong kind of standardization now fostered by advertising, is that the cost of doing the scientific research work necessary to make the best possible

article for the price, is only a tiny fraction of the usual outlay for salesmanship. When the right kind of standardization becomes more prevalent, it will pay to do a thousand dollars worth of research on an article selling for 5 cents. The authors know of just one case where adequate engineering study has been devoted to a 5-cent article under present conditions. Yet often millions of replicas of such articles are sold.

### *Specifications*

Before proceeding to a summary of the consumer's stake in standards, let us look once more, and this time a little more carefully than was done in Chapter IV, at one of the chief arms of the standards technique—the specification.

What are these specifications that can untie the knots in some of the fearful and confusing complexities of the market? In a word, a specification is a definite statement, addressed usually to a producer, of what is required in the way of composition, construction, utility, durability, efficiency, texture, shape, form, or dimension, in goods or processes. When we are in the market for edible gelatine, we walk into our grocer's shop and ask for Jello, or Knox's gelatine. When a Government hospital has need for gelatine, it turns to its supply schedule, which is a sort of mail order catalog without a single alluring picture, and finds the following:

Item 10060. *Gelatin—granulated; in packages; must not contain bacteria in excess of 50,000 per gram, arsenic in excess of 1.4 parts per million, copper in excess of 30 parts per million, and zinc in excess of 100 parts per million. . . . Maximum quantity to be furnished on this item not to exceed 5,000 lbs.; \$.3195 per lb., delivered in 10 days.*



Or it finds:

Item 10030. *Chocolate—best; unsweetened; to contain not more than 3 per cent of ash insoluble in water, 3.5 per cent of crude fiber, 9 per cent of cocoa starch, and not less than 45 per cent of cocoa fat; \$.164 per lb., delivered in 3 days. (We pay around 45 cents per pound, retail distribution included).*

It is interesting to learn that the "chocolatiness" so to speak, can be measured, and that gelatine has had a bad past, if not a bad present, in respect to impurities of a very poisonous kind.

Does General Motors send a boy out to a grocery store when it wants a cleaner for a dirty painted wall? Not at all. Under the prosaic name of "painted surface cleanser," it sets down a simple formula in its specification 2404M, to which is added a brief summary covering purity of ingredients, together with the statement that the material is to be used to clean painted walls and woodwork where they are very dirty, as a substitute for repainting. The specification further plainly states that if *too much of the material is used*, the paint will be injured or removed. Not so with the labeling on the usual advertised brands of cleaners. Such are not content with so simple a name as "painted surface cleaner," but most have a more appealing name under which a dozen other uses can be suggested. Further, their incantations must avoid negative expressions. There must, with occasional exceptions, be no warning against using too much of the mixture, or against leaving it on the surface too long—lest the customer receive the unfortunate idea that the product has limitations. Kleanall, we remember, carefully avoided all mention of its poisonous, corrosive ingredient. To read the labels of the going list

of household cleansers is to find that 100 per cent perfection has been attained in nearly every case.

The theory underlying the specification is simple. Many, possibly a majority, of manufacturers of goods do not know what is best to supply. Their initiative tends to be expended in other directions. This is witnessed by the fact that whenever possible they produce goods of varying characteristics, for which they claim varying advantages. Even when they do know what is best, the old and the new competition frequently force them into the manufacture of meaningless variations. Therefore, says the Government and the efficient private corporation, let us decide which among the many types of articles offered, best combines the qualities we need, at minimum cost, all things considered, and then prepare a specification that will make it possible for the manufacturer to know exactly what we want, and for our inspectors to determine when such requirements have been met. When this is done, the haze of talking points fades away, and the real essentials begin to shine out with a degree of definiteness and clarity unheard of in the general run of buying.

Everyone knows what carbon paper is intended to do, but when one has set down in numerical, measurable, terms what that function is—an advance has been made that enables the buyer to review the maze of carbon paper claims from a totally new and advantageous angle. When the requirement is set down, for example, that standard weight typewriter carbon shall make not less than five clean, clear, legible carbon copies at a time, with elite type, using a No. 16, 50 per cent rag bond first sheet, and No. 9 manifold bond copy sheets against a rubber platen—a beginning has been made in carbon paper wisdom which certainly exceeds that of any ordinary carbon paper sales-

man, and goes far beyond that of the retail stationer. A point has been reached where the mere reiteration of claims that each brand on the market is the best becomes utterly meaningless. From now on you have to be shown, and have a yardstick with which to measure the showing.<sup>1</sup>

The simplest and oldest specification is a "recipe" like the following for making floor wax:

#### Homemade Floor Wax No. 1

$\frac{1}{4}$  pound beeswax

1 pound paraffin

$\frac{1}{4}$  pint raw linseed oil

$1\frac{1}{4}$  pints turpentine

Melt the beeswax and the paraffin, add the linseed oil and turpentine, and stir the mixture vigorously. Unfinished wood will be darkened somewhat by this wax as a result of the absorption of the linseed oil. Use hot water, not flame, as a source of heat in making the wax to avoid the risk of igniting the turpentine.

This mixture will cost, for ingredients bought at retail, around 25 cents per pound. It will take about 15 minutes to mix the ingredients and prepare the finished wax. When you compare this outlay with a wax of completely unknown quality, produced under all the economies of mass production, but selling under a proprietary name for 80 cents a pound—the shattering effect of specifications on Wonderland is obvious. The home made recipe furthermore, contrary to the labels on branded goods, specifically states that the product is inflammable and that unfinished wood will be darkened, and so gives due and fair warning of what to expect when it is used.<sup>2</sup>

The above formula, developed by Dr. Kerr at Cornell University, represents certainty of performance combined with economy. The 80-cent can, in the absence of speci-

fications, represents wholly uncertain performance at a manifestly exorbitant price. Floor wax furthermore is one of the products where the advertising customarily neglects to tell either the price or the size of the package.

Standards need not even remove the "class appeal" from goods. The Navy has a beautiful set of specifications for "Chinaware: officers' mess gear," which provides different designs for flag officers' and captains' mess, wardroom officers' mess, junior officers' mess, and warrant officers' mess. It has a set of standardized distinguishing marks of spread eagles and stars, nicely graded in number and arrangement for admirals, rear admirals, vice admirals, and captains. A Rolls-Royce is almost as standard in design and appearance as a Ford, and in finish and performance, probably a good deal more so.

It is noteworthy further that products *rejected* by buyers who purchase under specifications, become products accepted a little later by buyers who do not. The Bureau of Standards, testing binoculars for the Shipping Board, could accept only 1,000 out of 1,500 tested. Is there any reason to suppose that the rejected binoculars did not arrive on the regular market shortly after as first grade material? Indeed one reason for opposition to the extension of the use of specifications to a wider circle of buyers has been the fear on the part of some manufacturers that rejected goods would have to be frankly called seconds, and so sold at a price which reflected their deficient quality.

Purchase on specification is the method by which one can safely give an order to a low bidder without running the risk of proportionately lower grade workmanship or materials. The State of California obtained a first class job on some special machine work for \$48, the high bid for which was \$213. A tire manufacturer bought a special valve at \$76, on which the higher bids were around \$130.

Another organization received a perfect job of photographic reproduction at \$6 on which the high bid was \$18.

A naval officer bought an overcoat from the supply service, for \$75, in 1914. He wore it continuously during winter weather, with occasional alterations, until 1925. It is to-day in good condition, unfaded, and of fine appearance, *after the equivalent of more than 50 months continuous wear*. The all virgin wool melton in it was bought to specification. This incredible performance is regularly possible with good woollens of the proper weave, but there is no means, short of specifications, by which the ultimate consumer can bring such goods upon the market.

Your clothing merchant will at once rise to object that no one will buy such an overcoat for civilian wear—that it is too heavy, too stiff, it does not permit one to sit comfortably for long periods in an automobile, or what not. He will say that whether or not people ought to wear such overcoats, they will not readily buy them, but will turn instead to light flimsy fabrics that are flexible and easy of fit. To all of which only one question need be put: Has the clothing industry ever made any effort to give consumers a correct knowledge of just what one sacrifices in the way of warmth and durability by buying a soft and flimsy coat? The authors have purchased many a poor-wearing coat, but no salesman has ever cautioned us that we might do better and need fewer coats if we bought closer-woven and heavier material. The system is not set up that way. The clothing industry would be reduced to a fraction of its present dollar volume of sales, with far fewer time, space, and service consuming transactions if the emphasis were suddenly put upon giving the most clothing value for a dollar. But once new buying methods based on standards were introduced, there is no logical reason why the saving of waste should not release sufficient purchasing



power to enable consumers to buy more needed clothes, and so give the same turnover to the industry. America as a nation is far from providing adequate clothing to all its 20 million families at the present time. For every 100 men it is reported that only 62 suits are now sold per year; 52 hats, 18 pairs of gloves.

### *New Measures of Value*

A study of specifications leads logically into the field of what might be termed the economics of value. Our time-honored habit of measuring everything in terms of one unit, money, has the merit of simplicity, but quite ignores certain other important considerations. The chemist and the physicist should be heard as well as the economist.

The supervision of weights and measures is an immemorial Government function. It is closely related to the Government's implicit guarantee of the soundness of money, in that within a simple industrial civilization, measures of value in exchange are determined when goods are weighed, measured or counted and the fineness of the gold or silver taken in exchange, is in effect certified to. Curiously enough, as industry has grown more complex, this simple procedure has become increasingly illusory, by virtue of the introduction into goods—into nearly all goods in fact—of values which cannot be weighed on the scales, or measured in the quart can. There has been little attempt to extend the weights and measures concept in an analogous way, to appraise other equally important components of value that are exchanged for the price.

To take a simple illustration: One of the things insisted upon in buying soap is that a specific number, or weight, of cakes be furnished. Yet if a stated amount of what may be called "soapiness" is furnished, one can, within limits, disregard the weight or the number of cakes.

Similarly if gasoline could be produced with twice the heat value of customary gasolines, one could afford to accept two gallons at the regular price of four; assuming that the carburetor were adjusted to handle the more potent product. Chemical composition or physical concentration or potency is thus an integral part of value. Henry D. Hubbard, Secretary of the Bureau of Standards, states this clearly when he says: "It is the properties of the material that are the real utilities bought, sold and used."

Yet Government-supervised measuring systems, as they have developed from older and simpler days, have provided assurance of full weight or volume, but in no way give any guarantee of full measure based on quality and performance. In this respect the service of the state has not kept pace with the need of industry for an impartial third party in the background of every transaction to guarantee the multiform modern equivalent of the pound, the foot and the gallon.

In very few cases has the state intervened to provide guarantees of value as well as of the simpler concept of weight or measure. In certain insecticides, standards of potency have been set, and are enforced by the Government, but only in *interstate* transactions. For specified seeds, in certain states, germinating power is required by law to be above a stated minimum, and the amount of weed seeds below a stated maximum. The courts will hold that coal when adulterated above a certain limit with slate or other inert matter, is not coal at all. The slow and expensive processes of the courts, however, are not able to provide the quick and sensitive response to the needs of changing industry, which new raw materials, and processes of production, demand.

Our argument for standards is essentially the setting up

of dependable measures for *all kinds of values* in utility goods. This need not necessarily be a pure Government function, for it is unlikely that the ground which the political state has lost in its failure to keep pace with the elaboration of industrial values, will ever be completely recovered. It is probable that new concepts require new agencies, controlled at the top, perhaps, by the state, but operating throughout in close cooperation with industry itself, and with the consumers of industrial goods. . . . But of this more in a later chapter.

It is curious that the interpretation of goods in terms of *both* price and value is so little recognized. Any large buyer will demand that his receiving department count the number of bottles of ink in a shipment, measure the yardage of fabric, and weigh the coal with care; even as he will figure "net cost," so-called, to the fourth decimal place. Yet a variation in quality over a range of 50 per cent will elude him time and again. Lacking specifications, this element is utterly beyond control in the average small factory, and in most of the larger ones. As for the ultimate consumer, he has never even heard of it. The value of liquid glue is only partly determined by the number of quarts, and the price per quart; excessive diluteness may cost the buyer exactly as much as omitting part of the shipment, or charging an exorbitant price. The process of counting and weighing modern industrial goods is a mere ritual unless the physicist, chemist and engineer are standing by with instruments to measure performance and estimate durability, or unless their work has been crystallized in the form of a specification. The householder rightly insists upon full weight in his deliveries of coal—but what if the weight is made up partly by wetting the shipment thoroughly just before delivery, or by an excess amount of ash or refuse?

We are not naive enough to suggest that quality has never been a factor in price. It is always a factor. But the standards for measuring it are very imperfectly developed as compared with standards for weight and volume. We remember the sheets tested by Columbia University, where quality bore only a remote and occasional relationship to the price. Failing such standards, the door is thrown open to the charlatan, the incompetent, and the profiteer. And failing such standards, the odds against the honest and painstaking manufacturer are impossibly high.

There is nothing about standardization as here defined to preclude innovation and improvement. The very existence of a standard is a constant invitation to experimentation and development. It is when no clearly defined standard exists; when only custom and usage govern, that new ideas and new methods are difficult to introduce. Nor does a standard involve the idea of perfection; it does represent the best that can be obtained in large numbers and with economy, when all factors in cost are considered. The field of standardization is obviously in goods where utility is a prime consideration. Its application to luxuries and aesthetic goods, is only in those elements which involve utility. For no matter how splendid and rare the house one is able to build, one must be concerned with the adequacy of its heating and plumbing systems, the snug fitting of doors and windows, the solidity and strength of masonry, the soundness of beams and columns.

Standards appeal more directly to the interest of the intermediate consumer than to the ultimate consumer, though in the long run because of his greater difficulty in finding goods to supply his needs, the latter stands to secure the larger benefit. The progressive factory owner is quick

to see the economy and common sense of methods protecting the quality of his raw materials. Furthermore, either on his own initiative, or through the action of his industrial group, the technique of specifications lies always ready to his hand.

The ultimate consumer, unless organized in a buying club or a coöperative association cannot readily buy to specification. The method is much more difficult for him to use. His main protection must come from such general specifications as the Government can lay down in the matter of pure food, pure drugs, pure milk, plainly marked grades, and the rest.

But specifications are only one element of standards. As standards gain headway in industry in general—particularly the six kinds described in the last chapter—the ultimate consumer stands to gain. Standards expedite purchasing, enabling him to secure goods, and particularly replacement parts, promptly and without errors; they favor development work and the quick utilization of research by affording a definite point of departure at which new designs and improvements can begin. They bring out the facts needed for sound judgment on comparative cost and value, and the relation between cost of raw materials and of processed goods, and so undermine false claims. They reduce engineering and operating problems, permit buyer and seller to speak the same language, force sales talk to focus on fundamentals. They eliminate minor and irrelevant variations. And perhaps most astonishing of all to the lay mind, standards often actually *improve* a given product because, due to stability of demand, the product can be built with more specialized and more precise tools, and with more research behind it, than is the case when small quantities and excessive varieties are the order of the day. (For nicety of



workmanship and exact adaptation to its work, the present day vacuum tube or fine watch has no counterpart in handicraft industry).

The Chamber of Commerce of the United States has estimated that one-quarter of all industrial effort in America is wasted because of irrelevant over-diversification of styles, types and sizes. This means the labor power of approximately 5,000,000 men and women, and a full 25 per cent in the cost of living. And this is only one factor in the consumer's total stake in standards.

## CHAPTER XI

### OUTPOSTS—GOVERNMENTAL

"Give your evidence," said the King.

"Shan't," said the Cook.

It has been noted earlier that there was nothing new or revolutionary about the thesis upon which this book is based. Legal protection for the consumer covering certain aspects of certain goods is an established fact. Buying to specification obtains over limited areas. Testing laboratories are to be found from coast to coast. In this chapter and the one to follow, we propose to review the major agencies now in operation: what they do, what their policy is, under whose auspices they function, how, if at all, they aid the consumer. Space does not permit a complete inventory or a full description, but we hope at least to set down the main types.

The sum total of engineering work done is impressive as we shall see. The fraction which reaches the ultimate consumer is not so impressive. There is crying need for more coördination, and for more direct release of information. We have, in the aggregate, a great plant, but from the ultimate consumer's point of view it is running only an hour or less a day.

#### *The Bureau of Standards*

Even as the philosophy of standards in contrast with rule of thumb, is the yardstick which we have laid against modern merchandising, so it is the principles underlying the

work of the Bureau of Standards at Washington that have been ever in the back of our minds as coming nearest to furnishing the ideal technique for protecting and informing the buyer. Better than any other single institution, it illustrates the possibilities of transferring the conception of standards from the realm of theory to the realm of the concrete. But that transfer is still far from accomplished.

The Bureau of Standards was set up by legislative enactment in 1901. It was placed under the control of the Secretary of Commerce and Labor (now Commerce), but has always functioned with a considerable degree of independence. Its director is appointed by the President, upon nomination by the Secretary of Commerce; its staff is under civil service regulations and protected to an almost unique degree from political pressure.

Its original duties were simple—the erection of suitable scientific standards for weights and measures. In one of the Bureau's vaults lie the platinum-iridium kilogram and meter bar from which are derived all our measures of weight, length and capacity. The Office of Weights and Measures, the Bureau's predecessor, had, in 1897, two basement rooms, two cellar rooms, one verifier, one adjuster, a mechanic, a messenger and a watchman. (During the war, 20 years later, the staff of the Bureau rose to over 1,600 persons!)

Gradually the Bureau began to take on other duties. Its scientific staff provided a nucleus for further investigations on the Government's behalf, (and later on behalf of industry at large.) On account of its excellent equipment and expert staff, other departments got into the habit of referring dubious materials and devices to it for analysis and test. Very early in its career it began to work out specifications for the purchasing of Government supplies.

To-day the Bureau is a large, complex and exceedingly

important institution—one of the nerve centers of the federal Government machinery. Despite the tremendous pressure which must be brought to bear from time to time, it retains doggedly its tradition of scientific impartiality. Its findings are above the political battle. While it is continually losing men to the world of business and the lure of higher salaries, there seems to be no lack of other competent technicians to take their places. It provides a refuge where research is not continually hounded by the urge for “results” in terms of business profit.

The Bureau with its main buildings and clustering laboratories looks like a college. Altogether nearly \$3,000,000 has been invested in its plant. Its annual appropriation is about \$2,000,000. It boasts some of the most delicate and powerful testing equipment ever built. Here is a balance accurate to one hundred millionth of a pound. Here is a machine for testing the strength of structural materials, capable of exerting a pressure of ten million pounds.

The present staff is composed of 800 scientists and technicians, including supporting services, and 65 research associates detailed to the Bureau's laboratories by outside groups. Nearly 1,400 technical publications have been issued. The work is divided into the following main departments:

Weights and measures

Electro-physics and electrical engineering

Heat and power

Optics

Chemistry

Mechanics and sound

Metallurgy

Clay and silicate products

Simplified practice  
Building and housing  
Specifications.

In 1925, no less than 180,000 tests were carried on, covering among other things, electric batteries, lamps, clocks, watches, insulating materials, fuels, lubricants, optical instruments, paper, leather, rubber, textiles, brick, cement, sugar, gasoline pumps. One series of tests comprised the verification of 60,000 clinical (fever) thermometers.

The war gave a great impetus to the work of the Bureau. In the hurly burly of equipping some 5,000,000 soldiers, building millions of tons of shipping, putting the bulk of private industry on a war footing, the Bureau was one of the few institutions which could provide definite answers to definite questions. It was extensively patronized. In one month toward the end of the war, the Bureau handled 630 requests for tests and investigations, originating from no less than 170 different Government offices. Its war work resulted in a practicable and efficient cotton airplane fabric at a time when the needed supply of linen did not exist at any price, and when everyone else was perfectly certain that cotton was out of the question for the purpose. The final fabric, which was stronger than linen and as durable, was also adopted by the British government.

The Bureau develops practical as well as theoretical knowledge, which makes its opinion covering certain classes of goods the most valuable that can be obtained anywhere. Two engineers on the Bureau's staff know more about the performance of the various automobile tires on the market than anyone in the tire industry. One of the largest ink manufacturers does not even use the full time services of a chemist; yet at the Bureau there is at least one man who gives his full time to problems relating to the performance



of inks. Below is the number of specialists in a few selected fields.

	<i>Number of full time scientists and their assistants</i>
Radio .....	12
Paint, varnish and bituminous materials....	11
Textiles .....	10
Paper .....	10
Thermometers .....	8
Photography .....	6
Weighing scales .....	5
Electrochemistry, including dry batteries and storage batteries .....	5
Watches and clocks .....	2

The Bureau's work, being fact-finding, and fact-crystalizing, exerts no pressure toward a dead level of mediocrity in Government supplies. Although Bureau experts recommended against shaving cream and liquid toilet soap (the first being not so economical as solid soap; the second not so satisfactory in service), specifications for each have been duly prepared. On table chinaware, the Bureau has coöperated with the American Hotel Association, and with the Biltmore, Waldorf-Astoria, and Willard hotels, in service tests that were used as a check and a guide to the findings in the laboratory. In the field of art, distinguished sculptors and manufacturers of statuary are glad to come to the Bureau for advice on the composition and patina of statuary bronze, even as the White House authorities come for advice on velvet draperies of durable quality and fast color. What the manufacturing industries think of the reliability and practical value of the Bureau's work may be judged by the fact that 65 research associates have been stationed there, representing both individual firms and trade and technical associations. One association (cement) has a whole corps of such experts working in the Bureau's laboratories.

We have noted earlier that the Bureau saves the federal Government in the neighborhood of \$100,000,000 a year on purchases of supplies and equipment. But it has also made great savings for private industry, as well as for the consumer at large. For instance: As a result of its work on builders' hardware, 100 non-standard finishes have been cut to 25, saving the industry \$10,000,000 a year. Following work for the petroleum and automobile industries, \$100,000,000 annually has been reclaimed from the crude oil supply in the form of additional gasoline. Gasoline saved through increased use of cord tires—which require on the average one horsepower less per car, and whose superior efficiency was first definitely shown by the Bureau—amounts to no less than \$40,000,000 each year. On automobile tires, brakes and fuel alone, the total waste eliminated by the Bureau's work is placed at \$155,000,000 annually. In eleven years of track scale testing, the percentage of acceptable scales has been raised from 38 to 62 per cent. One piece of research on the hardening of concrete saved \$500 a day on a single construction contract. From the general use of a new type of natural gas burner—four times as efficient as the burner now in common use—\$250,000 a day can be saved, while the consumption of natural gas in homes can be cut to one-third of the present volume.<sup>1</sup>

It must be admitted that the Government does not always obtain lower prices or better goods than the private or corporate consumer. Much of the effectiveness of federal technical work is frittered away by obsolete and bureaucratic purchasing regulations. Prices on some Government supplies are as high as the consumer pays at retail; on some they are much higher than the large department store will pay for the same material in similar quantities. But on many others—where demand is known and can be deter-

mined in advance—prices are often less than half of what the private merchant pays. Proprietary articles with their inevitable price inflation are almost never purchased by the Government as such. They may be furnished under specification at a price reasonably consistent with the cost of their ingredients, by a maker willing so to market his product. In short, one supremely important fact stands out. The Government always knows the quality of the goods it buys. It is never swayed by the magic of advertising. It has left Wonderland for good and all. The goods it purchases are suited to specific and definite requirements. And the price that it pays for many of those goods is far lower than prices paid for similar quantities bought by outside organizations not supported by the testing technique.

Where does the consumer figure in this inspiring picture? Dr. F. C. Brown, Assistant Director of the Bureau, has estimated that the wealth of the nation has been enhanced to the extent of a billion dollars a year by virtue of the Bureau's activities, but it is of course impossible to hazard a guess as to what proportion of this filters through in the form of concrete savings to the ultimate consumer.

Which brings us to ask a blunt and necessary question. Why does a service run by taxpayers' money refuse information covering competitive products—to that same taxpayer? The answer is obvious but not altogether convincing. It is argued that the general release of test results covering competitive products by name of maker will promote commercial injustice. K's oil may never have been submitted for test. A's oil, which made a high rank, has changed its process and is now inferior. This point is well taken of course, but is it important enough to freeze out the common citizen to eternity? Release would make a disturbance—here and there—granted. Some injustice would be done—granted. But facts are facts, and the

possibility of their misuse is something that always must be faced. Galileo had some facts that first and last, upset a good many people. Should they have been bottled up forever? That was the theory of the Best Minds of the day, but modern opinion holds differently.

In the long run would not the great savings which the Government achieves through the Bureau's work be multiplied a hundred fold if all could take advantage of its findings—both ultimate consumer, manufacturer and dealer? Manufacturers would have at their command the net working result of research facilities which even great corporations cannot now afford (or think they cannot); the consumer would have a chance to know how to secure better overcoats, shoes, household equipment—a hundred things—at a fraction of the cost that he now, out of his limitless ignorance, is forced to pay. A scrutiny of the catalogue of one of the great mail order houses, reveals the fact that on over half of the non-luxury products listed, the Bureau has already collected essential information. And if the Bureau has not the data, there is always the chance that the Navy, the Bureau of Chemistry, the Bureau of Home Economics or one of the other Government services testing consumers' goods, has the needed information.

Furthermore there is no reason why the citizens who pay for the Bureau and the other Government laboratories should not have the right to *initiate* a series of tests when the field is important and the known information either inadequate or non-existent. Manufacturers and promoters can now secure all the results of competitive tests (maker's names deleted); and they have initiated thousands of new tests which the Bureau has conducted often without cost to themselves. Has not the ultimate consumer an equal right?

Is it really to the advantage of industry to be able to sell

to a naturalist or to an explorer a field glass which is not good enough for a naval officer; or to sell to a school teacher a pair of shoes which is not good enough for an ordinary seaman?

With the Bureau's testing information freely available, a great lever would begin to operate on the manufacture of shoddy and shady goods, and on the selling of sound goods at exorbitant margins above their basic cost. And as a part of the process, the maker of good material who is willing to sell on a stable market at a reasonable margin, would not only have nothing to fear—he would fall heir to the business of the shoddy maker and the profiteer. It would require more temporary confusion and possible minor injustices than could conceivably arise, to offset the enormous benefits which would flow from a free release of the magnificent work now done by the Bureau of Standards.

The National Physical Laboratory is the British counterpart of the Bureau of Standards. Both conduct exhaustive tests on watches. American results are kept secret, but the British results are freely published. In its 1925 report, the National Physical Laboratory gives the test findings on the 50 watches obtaining the highest ratings. The makes which have ranked consistently high since 1915, are: Ditisheim, Zenith, Nardin, and Vacheron and Constantin.

We leave the last word to John Dinsmore of the Educational Buyers' Association:

"The buyers of the country find themselves in a position comparable to that of a traveler in an unknown territory who carries with him, in a sealed tin box, a comprehensive map of the territory through which he travels. The map is complete and might be of invaluable service but it does not help any so long as



it remains sealed within the technical walls set up by the Bureau of Standards."

### *The Navy as Expert Buyer*

The Navy Department has done a great deal of competent work in purchasing, much of it of a pioneering character. Although it uses data from the Bureau of Standards, it also carries on a very considerable amount of research and testing work of its own. Moreover, it buys on a strictly competitive basis, and almost exclusively on specification, paying no heed to proprietary articles and brands. It has established a confidential approved list of manufacturers able and likely to produce certain goods in accordance with its requirements, based upon tests conducted *at the supplier's expense* in Navy laboratories. It debars other manufacturers from bidding, when due to dishonesty, incompetence, or habitual carelessness, they impose unwarranted costs of inspection or administration upon the purchasing officers. The Navy buys hacksaw blades on the unique basis of the amount of metal cut per dollar of blade cost. It buys tool steel on proven cutting efficiency, paying a price proportionate to the work done. Nothing enters into the transaction save performance measured in the shop and in the laboratory. The War and Navy Departments' specifications cover no less than 5500 kinds of supplies.

### *The Department of Agriculture's Work for Ultimate Consumers.*

The Department of Agriculture does a great deal of work for the ultimate consumer in the field of household goods and equipment, and in the form of advice and service to the farmer. Yet the Department has found it expedient (save in legal cases, where the facts about particular makes

and makers are a matter of court record), to confine its advice to methods of making or selecting material and supplies, rather than what makes to buy, or from whom to buy them. For example, when a certain fungicide is exorbitantly expensive, the farmer is told exactly how to make the product himself at minimum cost. When paint is expensive and adulteration is common, the Department issues a bulletin called "Painting on the Farm" which tells exactly how to mix one's own paint, and how to apply it. (The information is also valid in the city). If you want to know whether to use oil or wax or paint on a floor, the Department describes the advantages of each and how to make it. You can then proceed with a feeling of confidence and a certainty of economy that a solid month's reading of advertisements cannot give you. You learn from these bulletins that you do not have to use Bingo to polish bath tubs or Bongo to rejuvenate aluminum—there are even better ways, neither branded nor patented.

The Department of Agriculture has also set up official standards for fruits, vegetables, nuts, eggs, wool, cotton, grain, butter, livestock and dressed meats,—in fact for all major agricultural products. When called upon, it provides shipper and consignee with an official certificate of inspection based on grading by experts. Of the 1,000,000 car loads of fruits and vegetables sold yearly, about 200,000 are certified under the auspices of the Bureau of Agricultural Economics. Grain shipped in interstate or foreign commerce *must* be sold under the standard Government grades.

The scientific yet thoroughly practical system developed by the Department—supported by licensed inspectors coöperating with state, municipal and commercial officials, together with a campaign of demonstrations and educational propaganda brought directly to the farmers' and merchants' door—has made this the most effective and loyally

supported system of standards that exists anywhere. It also gives us an example of publicity at its best. Furthermore it involves the most difficult problems met in any standardization work, in that the articles standardized are living organisms, and 6,000,000 "manufacturing plants"—the farms of America—are involved in their production. The work used to meet with violent opposition. Now it is accepted, supported and encouraged by the farmer and by business at large.

The Bureau of Home Economics of the Department of Agriculture comes the nearest of any Government service to the problems of the ultimate consumer. But for the study of those problems, affecting materials, equipment and arrangement of 20,000,000 American homes, the total appropriation is only about \$120,000 a year—the merest pittance in contrast with the great sums which the Government devotes to the interests of manufacturers and business generally—in the Bureau of Foreign and Domestic Commerce for instance. The Bureau of Home Economics is addressed primarily to the task of helping and informing people with small incomes—how to arrange their kitchens; the most economical methods for laundering—and it needs the support of every public spirited citizen. By all odds the greatest industry in the country is that which the housewife carries on. It involves more capital, more labor, more raw materials than any other enterprise.

### *The Federal Trade Commission*

The legislation which called into existence the Trade Commission in 1914 was designed to fill a gap in the machinery of the courts. Dealer A had no legal case against dealer B, where B was interfering with A's business by misrepresentation and unfair competition. The courts had held that if all persons are to be "compelled to deal solely in

goods which are exactly what they are represented to be, the remedy must come from the legislature and not from the courts." Congress took up the challenge, and the Federal Trade Commission was the result.

Before its coming, zinc washboards could be sold as aluminum—and were so sold—and no practicable mode of action lay against the manufacturer. Similarly a firm making imitation linoleum could not be prevented from representing it as real linoleum, because the injury was not directed against a particular competitor, and thus there existed no sufficient interest, except on the part of the state itself, to prevent the fraud. Deceptive practices of this kind were so numerous that it was exceedingly difficult for salesmen or merchants to deal honestly. Such practices are still common as we have shown in the preceding pages, but many of the grosser frauds are now caught by the Trade Commission—*provided they are troublesome enough to competitors to warrant the time and expense of laying a complaint*. If the fraud is one that damages the consumer only, in that the bulk of the trade connives at the practice, nothing is likely to happen.

The Commission never steps in of its own accord, but only when somebody protests—almost always a competitor. If the misrepresentation or misbranding takes place entirely within the confines of one state, never entering interstate commerce, the Commission is not concerned. Such a case will have to be handled according to the local legislation obtaining—if any. Usually there is not any—or if there is, the District Attorney is too busy.

On the filing of a bona fide complaint, the Commission resolves itself into a sort of court. Evidence is presented in the shape of advertising, labels, correspondence, or what not; and sometimes decision turns upon the actual composition or performance of the article as against the claims

made for it. What is it composed of; how does it perform? The Commission, having no laboratories of its own, turns usually in such cases to the Bureau of Standards, and the varnish or near silk or silverware is put through the mill of quantitative analysis. With the technical report in hand, the Commission, by majority vote, hands down its decision. Dealer B is ordered "to cease and desist" from his methods of unfair competition, or he is not so ordered, depending on the facts and the conditions in the trade. The decision (until recently) became a matter of public record, together with the report of any scientific tests made. Thus through the back door, as it were, the consumer has some (not many) of his purchases tested by the Bureau of Standards, on order of the Federal Trade Commission, and the results, with names of companies complete, made available to him—if he has the patience to look up the docket.

Of late, we regret to state, the Commission seems to have adopted a more cautious policy in respect to the cases which come before it. There is a definite tendency to make more private agreements with offending companies; letting them off without publicity for the findings on their promise to behave themselves in the future. This is thought to be less upsetting to business. Doubtless it is, but since when has it been the announced policy of public authority to refrain from upsetting proven offenders against that authority?

Furthermore there is a tendency to go lightly on the larger concerns while treating the smaller companies as summarily as heretofore. Witness the case of H. R. Mallinson and Co., a great New York silk house. It advertised "Silks de Luxe," "The World's Finest Silks," "The word 'Mallinson' on the selvage assures you of the genuine"—in connection with certain products which did not measure up to the words used. The Commission voted however, by a majority of one, to dismiss the case. Commissioners



Nugent and Thompson dissented. In his dissenting opinion, Mr. Thompson cites 24 cases in which cease and desist orders had been issued, where "practically the same questions of false advertising and misbranding of silks" had existed as in the Mallinson docket. And he says:

"It seems to me utterly illogical and unfair to have issued complaints and orders against many other companies, a number of which were much smaller concerns, and to discriminate in favor of respondent by not issuing an order against it, particularly in view of the admissions on its part before, and in the stipulations hereinafter referred to." <sup>a</sup>

### *The lower depths again*

The Trade Commission's work at best is only one thin wedge in a very wide gap. Consider for instance the freedom with which canvassers, fly-by-night shops, and "window workers" carry on their activities in any town or city, strictly "intra-state." The number of guaranteed "gold filled railroad watches," "Arizona diamonds," "English broadcloth shirts," "Panama hats," "silk umbrellas," "genuine army officers' shoes," and the like, that one can find on sale in the meaner streets of any town, add up to an appalling total of useless production and waste. There are sizeable firms who make a business of manufacturing worthless merchandise for such stores. They provide also for the smooth tongued gentlemen who, finding themselves in temporary financial difficulties, offer to sell us a fine 23-jewel railroad watch that was a gift from father at graduation time. Such watches, plated with less than 3 cents worth of gold, are bought in dozen lots from the sort of firms that advertise in the sporting magazines. They have a healthy tick, an active movement, much imitation

damaskeening, and are richly spangled with bright red glass jewels. Often there is a picture of a puffing locomotive on the dial over some name like "Waltam," or other slight misspelling of a famous make. Watch chains with a bright but infinitesimally thin coating of gold; revolvers that will not go off—and would be in danger of bursting if they did—are made up for the same travelling trade.

One informed on the total uselessness and tawdriness of this sort of merchandise finds difficulty in accounting for a system of law and of business ethics which permits manufacturers to continue supplying such goods. Yet we know of no law that covers the case. Of course, the *salesman* who engages in the trade can be jailed for obtaining money under false pretenses, but the maker of the goods is presumably innocent of any legal wrong, except when his chicanery crosses state lines, and interferes seriously with legitimate business. In cleaning up this sodden mess there is room for a Trade Commission or its equivalent in every state, and a national commission with enlarged powers devoted to the needs of the consumer.

### *State and Municipal Governments*

The State of North Dakota easily takes the lead in local legislation, in supplying the consumer with information about the goods he buys. It has established full and comprehensive food, drug and beverage inspection laws, with specifications defining color, freshness, potency, and other essential characteristics. Grades of vegetables, fruits, spices, etc., are defined in great detail. The state laboratory provides the unusual service of publicly listing the results of tests on milk, and of giving numerical scores based on excellence, to groceries, confectioners' shops, restaurants, bakeries, meat markets, slaughterhouses, bottling works, and wholesale houses through the state. A store proprietor

who does not post his score card may usually be assumed to be ashamed of his place on the list. A few stores score 99 and 100 per cent; a very few are found down at the condemnation limit of 70, or below.

The inspection and testing of gasoline which is carried on by North Dakota under federal specifications, is particularly thorough and effective. It is of the highest practical value to thousands of farmers and merchants who are dependent upon the supply for their cars, trucks and tractors. One bulletin gives summaries of gasoline and kerosene test results by companies, so that one may compare the quality furnished by each. Detailed laboratory results are published for many hundreds of samples, summed up by such blunt statements as the following:

"More than half of the samples from the White Eagle Oil Co. failed to meet one or more requirements of the gasoline specifications. . . . Nearly all of the unsatisfactory samples showed positive corrosion tests, 66 samples giving this result."

What such work can do in raising quality standards is well illustrated by a comparison of the year 1924 with 1925. Three and four-tenths per cent more gasoline passed all requirements in 1925 than in 1924 (an increase from 77.1 per cent to 80.5 per cent); and 20.3 per cent more kerosene (from 71.2 per cent to 91.5 per cent). Some companies have held their good reputation so dear that when a faulty car of gasoline or kerosene is found, they ship it out of North Dakota in order not to have it appear against their record. Other companies, in the case of gasoline, have added a sufficient amount of high test gasoline to bring the car within requirements. Once, when an especially bad shipment was in question, it was shipped into Minnesota with the statement that if too poor for the Minnesotans, Iowa would

take it. It is reported that Iowa did. This illustrates one of the difficulties of having the country spotted with only a few protected areas. Poorer grades are dumped into the unprotected areas. More uniformity in protection is badly needed.

Another important work for the farmers of North Dakota lies in the extensive testing of paints done by the state under the paint and varnish laws. Paints exposed on a test fence were carefully examined at regular intervals for general condition, hiding power, color, chalking, cracking, flaking, scaling, and the results reported in fullest detail in terms of the formula of each paint tested. Commercial paints and varnishes sold in the state now show a reasonably close agreement of ingredients listed on the label with the actual analysis made by the laboratory, indicating that legal control of this nature is eminently practical. There is reason to believe moreover, from Federal Trade Commission experience, that when any particular firm misrepresents its wares too flagrantly, no great time will elapse before some competitor brings news of the condition to the proper authorities. This is competition of the most welcome kind; competition to maintain high standards for the consumer.

### *Municipal*

City health departments frequently publish complete tabulations of the quality of milk as supplied by different producers. Not only is it possible to determine how each producer stands on the basis of any given month's samples, but one can sometimes find, as in the case of the Milk Association of the Oranges, New Jersey, the relative standing of all the producers in the community, based on a 12-months' average. When a company is guilty of grossly insanitary practices, the circumstances are frequently published. Sometimes the firm corrects the practices complained of, and sometimes it gives up its business.

Building departments of cities occasionally list approved building materials permitted for use under various sections of the building code.

### *Standards in Public Purchases*

In addition to what the taxpayer loses through his own private purchases in Wonderland, it is unfortunately true that a large fraction of what he pays in taxes is spent wastefully, due to the lax and ignorant methods of buying in many state, county, and city governments. Some states and cities have laws, if you please, which practically *prohibit* specification buying, and place a premium upon buying under brand or trade name, or through personal friendship or influence. Many cities are paying substantially retail prices for car load lots.

It is reported by the City Engineer of Beloit, Wisconsin, that cities have been buying their asphalt paving under conditions which have given the natural asphalt interests a practical monopoly of the field—either because of antiquated buying laws, or of specious representations on the part of asphalt salesmen to the effect that open or specification bidding would let in an unreliable product. With the introduction of specifications, Beloit saved 25 per cent on one paving job. The city opened up bidding to firms supplying *both* natural and by-product asphalt. When this was done, the natural asphalt producers found it eminently desirable to meet the price competition of the by-product material!

Substantially the same quality of fire hose—one of the important purchases of municipalities—varies in price from 67 cents to \$1.60 per foot. The price variation is said by experts to be made up largely of differences in the amount of the advertising and promotion load carried. The whole matter of fire hose purchases by cities is a long and seamy



tale, and lack of specifications has been almost entirely responsible for it. With specifications, and real competitive bidding under their provisions, the boodle for gross and petty grafters is so small as to throw them off the scent altogether.

Only a very few cities and states in the country are taking advantage of the large savings possible through the employment of the excellent specifications and test data already developed in the Government service and elsewhere. In a limited number of cities, Milwaukee, Dayton, and New London, for example; and in some state Governments, such as Massachusetts and California, public buying is conducted upon a capable and efficient basis. The politicians and their private and corporate friends have been forced by the erection of suitable standards to keep their feet out of the trough of public expenditure. Massachusetts refuses to buy on the basis of trade marks. Goods are bought on guaranteed production—the heat in coal, the miles in a tire—and a state laboratory checks performance.

The Bureau of Standards meanwhile has ruled that proper coöperation of the federal authorities with state and other Governmental bodies, justifies the release to the latter of technical information. It is willing to approve or condemn commercial products *by name* in a table giving comparative quality or performance. Local Governments can thus secure what the taxpayer cannot. If any state or city Government wishes to know what is the best typewriter ribbon or lubricating oil to buy, its officers need only write the Bureau to learn the detailed results of tests that have been made upon the product before its acceptance or rejection for Government purchase under specification. If the article has not already been tested by the Bureau, it is likely that the needed analysis can be arranged for without charge.

Altogether, it is estimated, about one billion dollars are spent annually by state and municipal Governments for supplies. The waste involved at present is terrific. Yet a concise practical method to prevent the bulk of it, is available, and for some few communities in operation.

It is clear from the foregoing that a real start in the testing technique has been made in American Government—federal, state and municipal. There is the beginning of solid ground under our feet. It is equally clear that an enormous amount remains to be done, both in the direction of coördinating and making available the results of present activities, and in the development of new activities. Uniform state laws and city ordinances would seem to be essential next steps. Another is the release to taxpayers of the invaluable information of the Bureau of Standards, and of the other federal, state and municipal bureaus.

## CHAPTER XII

### OUTPOSTS—PRIVATE

And now, which of these finger-posts ought I to follow, I wonder?

THE Government has no monopoly on the agencies which provide scientific information on consumer's goods. Some of the great corporation laboratories—like that of the General Electric Company—rival the Bureau of Standards. Such information, however, is bought and paid for, and normally only findings of a general nature—usually an advance in pure scientific research like Dr. Coolidge's cathode ray tube—are given out to the public. But what a story could be told if all the private laboratories opened their files!

There are also the laboratories which make a business of testing for a fee, serving their clients effectively and very confidentially. Only rarely do their findings ever reach the general consumer. There are the university laboratories which occasionally carry on tests of the greatest public importance—like the heating furnace experiment at Brown, already referred to. There are a few research agencies operating more or less directly in the consumer's interest—the Good Housekeeping Institute, The New York Herald Tribune Institute, and others. Finally, there are the professional societies, and the trade associations.

#### *Technical societies*

Far and away the leader among the technical societies from the point of view we are considering, is the American

Medical Association. It is as fearless as it is explicit in the exposure of quackery. Its Council on Pharmacy and Chemistry and its Bureau of Investigation are continuously busy in the public interest. It has haled untold rascals before the bar of public opinion; broken up hundreds of shell games. On the strength of its quantitative analysis, it has been sued for libel many times, to an aggregate of many millions. The total damages so far collected from the Association have been precisely one cent—awarded by a jury on what was probably a nice legal point to the makers of Wine of Cardui. We have already devoted a whole chapter (VII) to the work of the American Medical Association.

Of the professional engineering societies, perhaps the standardization work inaugurated by the automotive engineers has had the greatest influence upon the goods of the ordinary citizen. Standard rims make for easy interchange of tires; standard bolts and nuts for quick replacement of worn or damaged parts, as well as for great savings in manufacturing cost. Altogether the society has worked out and put into practice some 600 standards for the automobile industry. The total savings are reliably estimated at over \$750,000,000 a year. Much of this flows primarily to the benefit of the manufacturer, but a large amount is carried through to the automobile owning public. Meanwhile the society is prosecuting research into such matters as comparative riding qualities of solid and pneumatic tires, cold weather engine starting, the efficiency of different types of fuels and lubricants.

Even at this, however, one of the presidents of the Automotive Engineers has declared that for every dollar put into engineering of all kinds, including research, 20 dollars is put into automobile advertising. Yet automobiles get a degree of scientific attention vastly in excess of such things as vacuum cleaners, phonographs, door hinges, oil burners,

safety razors, clothing and furniture. . . . Some idea of what standards have already done for the motor car lies in a comparison between the cost of automobiles and common machine tools, per pound. In the absence of standards, and straight line volume production, a lathe or a planer will cost around one dollar per pound, while the standardized motor car may be bought for 30 cents a pound—less than the cost of butter by the tub! No more startling illustration of the value of standards could well be given. Furthermore, the United States Bureau of Labor Statistics in a recent survey tells us that three automobiles could be made in 1925, for the same number of man-hours it took to produce one automobile in 1914. Efficiency per worker has been *increased* 208 per cent.<sup>1</sup>

The materials testing experts and the petroleum engineers are close behind the automotive engineers in the development of specifications. The electrical engineers have worked for decades on standardization, but to date their results are mainly useful for the intermediate consumer rather than for the householder who wants to buy a heating element for his toaster. Similarly, experts on materials have promulgated elaborate methods for testing paint, useful for large corporations. Following this indispensable ground work however, what the householder requires is a specification for an outside white paint, or for a floor varnish, that he can rely on; and a correctly labelled can in which he can get it. Such cans are not to be found on the general market.

In far away China, the National Engineering Society has announced plans for the development of a national testing laboratory which will carry on impartial research and issue certificates to makers of products that are found satisfactory. The journal of the American Society of Mechanical Engineers in commenting editorially on the plan, notes that in the United States the facilities and personnel are avail-



able for a similar venture, but that, to date, a sufficient spirit of public service on the part of engineering societies has been lacking. But, says the editor, the engineers of America have a professional responsibility—like that of the medical profession—to rid the economic structure of quackery in commercial goods. . . . To which we can only cry amen! <sup>2, 3</sup>

With few exceptions our technical societies avoid plain speaking about products by name or brand. Papers before engineering bodies tend to refer only in broad terms to specific articles. One will almost never find lists or tabulations of concrete test data, or critical judgment on such things as typewriters, machine tools, electrical appliances, paints, or other engineering articles of public interest. Exceptions may be noted in the case of the heating and ventilating, and the refrigerating engineers, who are not afraid to call a spade a spade, and who often publish technical findings covering important classes of goods in their fields. The latter give, for example, a comprehensive list of the properties of heat insulating materials such as "Celotex," "Insulex," and scores of others.<sup>4</sup>

For a complex set of reasons, too involved to discuss here, it is likely that real certification of materials and products to the consumer will be done in this country, not by the technical societies, but by the Government or by private foundation, possibly with the trade associations collaborating. The engineer, the physicist and chemist are not as yet professional men in the same sense that the physician is. Their responsibility is normally to a corporation rather than to the public, and thus their freedom of action on technical matters is necessarily restricted to considerations revolving about the source of their income. A physician may say flatly that the advertising of Van Ess Special Dandruff Massage is unreliable, but the chemist who can say the

equivalent of Jones and Company's ink—when Jones buys dye and hydrochloric acid from Smith's corporate employer, is a rare if not extinct phenomenon. No matter who is going to be hurt, the physician, through his professional union, can speak his mind on quackery and nostrums. The engineer finds that to do so, publicly or in print, painfully complicates relations with employers. In fact, if he works for the average firm, he is not allowed to write or talk on matters touching his company's interests even in a remote way, except after due censorship of his expressions.<sup>5</sup>

The social cost of this forced reticence is enormous. Any group of a hundred assorted open-minded engineers and chemists can adduce facts about consumers' goods—how little it costs to make them, how much to sell them, how poorly they are designed, how quickly they will wear out, and how little the maker knows about their performance—that make the slow laborious findings of the Federal Trade Commission shrink into insignificance. But it is "inside stuff" and such facts never see the light of day. And indeed, why should anyone trouble to put a physicist and an engineer to designing a fountain pen, when the worst and the best will sell about equally well, because it is no one's business impartially to test and fearlessly to publish the performance of either? Meanwhile we can look hopefully over the Pacific to China. . . .

### *Trade associations*

The more enlightened trade associations have seen the waste of non-standard goods, particularly in their own purchases. The best of them are carrying over into the selling end as well, and so giving direct aid and comfort to the consumer. The asphalt roofing association has pledged itself to put its entire output on the basis of federal specifications—nothing to be made at a quality lower than

Government standards. The Secretary of the National Lumber Manufacturers Association looks forward to a "general recognition of specifications as the proper, logical and economical basis of the contract between buyer and seller, and the ultimate reduction of production and distribution wastes to a minimum."

Leadership in this intelligent view has been taken by the United States Chamber of Commerce, which has dinned the advantages of standards, specifications, and simplified practice into the ears of its members and of the general public ever since the war, and has published and widely circulated ten comprehensive bulletins on the subject. Both Mr. Hoover and Mr. Barnes, Past President of the Chamber, have steadily and persistently pointed out the production and distribution leakages which accompany a lack of established grades, sizes and qualities. They have also stressed the significance of such work being done *voluntarily* by the trade associations themselves. The Chamber has shown, furthermore, the importance of quality standards as an aid to foreign trade in markets where American goods are not well known.

The wool blanket manufacturers have adopted three standard grades, and a quality seal and label is issued to members meeting the standards. The bakers' association in coöperation with the Department of Agriculture has promulgated definitions and standards for bread, and the association registers baking materials submitted for test, and issues certificates of quality. We look forward to the time when the association takes standardization of the weight of loaves in hand.

The gas association, to protect the public against jerry-built gas ranges and heaters which give off the deadly carbon monoxide, has standardized nomenclature, materials, and stove, heater and tubing performance specifications,

This association now lists nearly 600 different models of gas ranges which have passed its tests, and gas company executives have generally pledged themselves not to sell to the public, ranges that are below the safety level. The association has adopted an approval mark by which ranges and other equipment that have passed the tests may be recognized by the consumer. This work has the support and coöperation of the Federal Bureau of Mines, the Bureau of Standards, and the Public Health Service; as well as 1700 companies distributing manufactured or natural gas, and of several hundred manufacturers of appliances.

Perhaps all things considered, this is the most important of the producers' trade association activities with relation to standardization, from the consumer's point of view. It comprises the complete chain of specifications, tests, certification, and, presumably, the policing of the industry to see that guarantees are compiled with. It is expected that ultimately every type of gas burning appliance on the market will be submitted to the laboratory. The work on a gas range before approval is said to involve 160 different tests, requiring 45 hours of operation and observations. About 75 per cent of the work relates to guaranteeing the consumer's safety. In contradistinction to the work of most of the other approval laboratories or institutes, the work of the gas association is based on published specifications, in the preparation of which impartial experts *outside* the industry coöperate actively, and the result is accordingly one which can be verified by competent experts at any time.

The laundry owners have extensive laboratory facilities, and have established standards for operation, wash room practice, and power plant practice in their industry. It is reported that they also have worked out data showing how many washings a shirt will survive, using stated amounts

of laundry chemicals. (At which point the consumer might well come into the picture. After all, they are his shirts!)

The fire underwriters have established a thoroughgoing service covering the test and certification of appliances involving fire and casualty hazards. In the event that one feels his rights invaded, he is free to appeal to the Bureau of Standards. Only once in twenty years has this right been claimed. Here one finds specifications, inspection work, comprehensive technical reports, certification, and a regular listing of approved products, so that the consumer may know the safe and efficient makes of electrical appliances, motion picture machines, automobile bumpers, locks, goggles, and fire fighting equipment. All this work is said to be conducted at a cost so low as to have no appreciable effect on selling prices. "Approved by the Underwriters Laboratories" or "Approved by Factory Mutual Laboratories," implies protection, from coast to coast.

A few trade associations are thus hard at it. They have made an impressive beginning on standardization work. Here and there they have their own testing laboratories. But it must be remembered that the passing of a resolution by a trade association does not mean that all the firms in the trade are going to live up to it forthwith. Many firms may not belong to the association to begin with, and there is usually no power of compulsion if they do. The whole thing rests on a gentlemen's agreement; which is the best possible kind of an agreement provided that everybody is a gentleman.

Experts are indispensable for arriving at standards but consumers, the Government, and the general public should be represented through formally accredited delegates, as is done in the American Engineering Standards Committee. No matter how able and expert may be the men who make technical decisions affecting large numbers of people over



wide areas, they cannot always do unbiased work when economically responsible to only one of the parties at interest. There is nothing in standards themselves to protect the consumer; their use may tend toward disregarding his interest completely if the competitive urge is powerful enough.

An electric wiring association is making a great outcry for better, and more expensive, house wiring. A few selections from its announcement give some idea of the part the consumer plays, or does not play, in the premises.

"It means for him (the electrical contractor) prestige, patronage, and bigger profits per job. . . . Household wiring service is to be standardized, organized, advertised. . . . House wiring is to be brought to a higher standard, the selling of house wiring better organized, and a new conception of house wiring popularized. . . . But that is merely the peg upon which to hang our hat. . . . Right away the whole complexion of the transaction changes. The question of saving a few pennies in labor and material at the expense of the contractor fades from the customer's mind. It is to be replaced by *the idea of adding hundreds of dollars to the value of the house for a few dollars invested in better wiring. . . .*"<sup>a</sup>

Our thoughts revert to the hot air furnace sorcerers who never mentioned price but only investment. Meanwhile some producers' trade associations have taken a belligerent attitude toward standardization, and have declined even to participate in conferences looking toward that end.

The attitude of organized manufacturers to certain bills that have been pending before Congress, requires a word or two. General opposition has developed against the truth-in-fabric bills which require woollen goods to be marked with the percentage of new and reworked wool contained.

It is clear from the testimony, that makers of woolen cloth are unwilling to let it become a matter of public knowledge that they are using large percentages of shoddy in supposedly "pure wool" clothing. Something like 80,000,-000 pounds per annum of reworked wool is being used, and it is probable that only a negligible percentage of this material reaches the consumer under its real name. It is estimated that shoddy equals one-quarter of the total of wool fiber entering into woolen fabrics. The manufacturers and retailers who testified against the bill affirmed that it would be unwise to tell the consumer how much reworked wool was in the goods, unless a full description of the other properties of the cloth was made at the same time. There would have been merit in this contention if a more complete method of description were proposed as an alternative; but such was not the case.'

The Lodge Bill, which is a proposed general statute providing penalties for misbranding, along the lines of the British Merchandise Marks Act, has the superficial advantage that it sets up no standards, only requiring that a commodity when sold shall be as represented. The difficulty with a law like this is that in the absence of a provision for standards, the less conscientious producer may sell useless or harmful products by merely exercising ingenuity in his labeling. He still would have a wide range of virtual misrepresentation through the use of catchy and insinuating brand names, and through implying more than he says, in his advertising—witness the results of the pure food and drug legislation where the labels say one thing and the page-spreads another. Under the misbranding acts now proposed it would be necessary only to hedge with sufficient care in the labeling, or to omit all specific designations entirely, and then proceed with the higher salesmanship as heretofore. The absence of standards to begin

with—regarded in some quarters as a great advantage of the misbranding bills—means that uniform practices, instead of being developed by steady planned work of technical experts, will be built up by the slow and uncertain process of court decisions. The function of setting standards is emphatically an administrative rather than a judicial one.

Trade associations can if they will, put a high degree of public service into their coöperative work. They can offset the odium of price fixing, by erecting facilities for guaranteeing products to the public, evidencing their sincerity by arranging for the filing of bonds forfeitable by member firms on proved non-compliance with the standards of the association. They can improve standards constantly by industrial conferences to which able and unbiased representatives of the public are invited as active and responsible participants.

Nothing, of course, could be happier than industry regulating itself in the public interest. Before the coming of the new competition, when each manufacturer played a lone hand, such an idea would have seemed fantastic. To-day, with hundreds of trade associations in the field, and more organizing every year, a margin of organized self-discipline becomes increasingly conceivable. The gas companies and some insurance groups appear actually to have done it. Many others, as we have seen, are doing it to some degree. But after all private enterprise is not in business for its health. The current hymns to "service" deceive no steady-eyed observer. To leave the erection of standards to each trade association as a private matter might help the association considerably, but the consumer not so much. If the technique is to be genuinely helpful to all concerned, there must be a community of interest—trade association, buyer, the Government, representatives from related indus-

tries; a joint program. In no other way can the consumer be sure of protection.

*Consumers' associations and laboratories*

If there had existed a militant organization of consumers with a staff of commodity experts, this book would never have been written. The federation of consumers against the competitive onslaught of organized producers bent on securing a larger and larger share of the national income, is sooner or later inevitable. This is particularly true because the interest of the Government itself tends to lie on the side of the group having the most articulate organization; in most places, and particularly with the federal Government, on the side of the manufacturer. In North Dakota, on the other hand, the strength of farmers' organizations was such that the state found itself ranged on the side of those who *buy* manufactured goods rather than those who sell them.

The Educational Buyers Association, whom we have repeatedly quoted, is a thoroughly competent organization on the side of the large consumer, such as a university. It publishes a series of reports on goods, in which various makes of the same article are carefully analyzed in the laboratory, by students at the University of Chicago. The results are assembled in complete form and circulated to members, thus placing them in much the same position with respect to certainty of value for money expended, as though the tests made on the same commodities by the Bureau of Standards had been put into their hands. The several commodities are fully identified as to maker and brand.

When brands were purchased by this method, practically no difference was found between the price paid by the members of the association, and that paid by the federal

Government at Washington. The same debunking process had taken place. For paper towels, the following data were given to members, covering 44 makes:

- Number of packages per case
- Price per case
- Type of package
- Size of towel
- Number of towels per package
- Cost per 10,000 square inches
- Cost per 1,000 towels
- Strength in pounds per inch
- Thickness
- Absorbing quality
- Appearance
- Color
- "Lintiness."

Would this be any help to a large buyer of paper towels? Would it be any help to you? And did any advertiser ever sell towels on such a basis? Here we have in compact form both the old and the new measures of value.<sup>8</sup>

One illuminating thing about this pioneer work is the extraordinarily small cost of the findings. The association has no laboratory but depends mainly upon the work of students for its tests. Savings in some cases have averaged as high as \$500 *per hour* of experts' time expended.

The Institute of American Meat Packers has recently decided to function more effectively as a consumer of huge quantities of goods, such as lumber, paper, machinery, lubricants, cans, trucks. It is understood that a \$500,000,000 a year buying pool is now in operation which will buy to specification wherever possible. It has been estimated that about 10 per cent of this huge sum will be saved in the first year of operation, long before the specifi-



cation methods will have achieved full momentum. The thoroughness of the Institute's work as a consumer may be judged from the fact that in 8 items of packers' supplies, 905 styles and sizes have been cut to 28; while in meat trolleys, one kind supplants the 167 formerly used. This case deals, of course, with organizing the intermediate, not the ultimate consumer.

We have finally to note the various housekeeping "institutes" which operate, nominally at least, in the ultimate consumer's interest. Some of them maintain their own laboratories. They cater primarily to the well-to-do matron. As a result, refrigerators selling from \$50 to \$300 are liable to be treated indiscriminately, as though a six to one difference in price was not a matter of concern. Products differing enormously in quality are often listed as of equal merit. One of the best known of these institutes professes to test everything which is capable of having performance determined. Further it "guarantees" the advertising pages of the journal by which it is maintained, covering goods said by its editors to be not susceptible to test. Among the latter are paints, varnishes, ink, scouring powders, complexion creams and scores of other products—all duly "guaranteed." Many of them are daily being tested in Government and private laboratories; for some of the products recognized specifications exist. To hold that such goods cannot have performance determined is nonsense.

These institutes doubtless mean well, but they are between the devil and the deep sea. They are trying to represent the consumer, but they are paid in effect by the advertiser. They can clear from the pages of their journals obvious frauds, but they cannot bite too deeply the hand that feeds them. All sorts of products—beauty preparations, tooth powders, soaps, certain types of household equipment—

that are not downright frauds, but are in the dubious zone, either because of excessive claims or excessive costs, pass muster here where they would not pass a strictly impartial reviewing body. Furthermore, technical resources are limited both as to staff and equipment. Such laboratories are simply not in a position to pass competently on the vast quantity of advertising which fills the magazines or newspapers they represent. One dreads to think what a group of Government experts would find if it undertook an impartial survey. No man can serve two masters, and these institute laboratories even when they are above specific criticism, offer no solution to the ultimate problem of securing the consumer his money's worth. They are at best a stop-gap of very limited usefulness.

By way of contrast, the oldest engineering society in the United States accepts no advertising for its journal, lest the slightest suspicion arise of the disinterestedness of its motives in discussing technical questions. But perhaps this is going too far in the opposite direction.

### *Private corporations*

Here is the Detroit Edison Company, a public utility selling electric current. Unlike most public utilities it maintains a special inspection department for the supplies it purchases, and it buys largely to specification. This has made it possible to use second and third grade goods in some kinds of work—ties for temporary trackage for example—where first quality at a high price had formerly been the practice. Before the department was installed, rejections of treated red cedar poles frequently went as high as 50 per cent; now rejections do not as a rule exceed one per cent. Formerly there was a continual wrangle over stoker castings; now poor ones are rarely submitted and none ever accepted. In buying springs under specification, \$1,800 was

saved on a \$4,000 transaction. The department costs to run between one and two per cent of the money value of goods purchased, and pays 50 per cent above the cost in direct savings, besides the vastly greater economies of securing the best product for a specific purpose. Its engineers say of other central power stations: "Most executive effort has been put behind financing of plant, production and sales, while the procurement and handling of material has been more or less left to take care of itself; yet in the case of a company doing its own construction work, something of the order of 50 per cent of the total gross income is expended for materials and equipment." <sup>9</sup>

One large rubber company saves \$10,000 a year on the single item of the valves it uses, by purchasing on performance tests and specifications rather than under brand names. The Ford plant has reduced the number of different boxes and crates used in shipment from 600 to 45, and of the latter, 14 sizes suffice for 95 per cent of the product shipped. By virtue of standardization, incandescent lamps now cost 44 per cent less than in 1914, though the average cost of all commodities has increased 65 per cent since that time. One operator can make 150 times as many lamps, in an hour as in 1881—before the coming of mass production—while the quality to-day is immeasurably better, and dependably uniform. <sup>10</sup>

On a proving ground of 1125 acres, the General Motors Company is doing for its own cars and for some of its competitors' everything that we suggested at the beginning of this book should be done for cars in general. It has level ground, hills, a speed track; gravel, tarvia and concrete roadways; roadways that can be artificially flooded; grades up to 24 per cent—all supervised by a staff of 50 experts. These experts measure acceleration, braking under

both dry and wet conditions, rolling friction, smoothness of riding, fuel economy, steering effort, vibration, obstruction of vision by car parts—everything except appearance and appointments. . . . But, needless to say, no consumer ever hears of these tests in a form to help his own buying on a real competitive basis.<sup>11</sup>

The laboratories of the General Motors Company provide us with a simple yet dramatic case showing at once the technique of testing, and the great values which often flow from it. A fan belt is a small part of an automobile but it can give a large amount of trouble. A few years ago General Motors engineers decided that fan belts were not standing up the way they should, and that something ought to be done about it. First they devised a testing apparatus which would give a fan belt as much wear in a few hours as it would get in many months of service—a sort of concentrated joy ride.

With this apparatus they found that the best belt they could buy lasted just 7 hours. Why did it not last longer? This is the first question a research man asks. They analyzed the situation carefully. As a result they made a belt that lasted 8 hours, then one that lasted 10 hours. Whereupon they decided: "This is not the right way to make a belt." They made it a new way and got 50 hours! Another improvement brought it to 75 hours. Then they tried a third method of construction and the belt ran for 120 hours. Still unsatisfied they improved it again and got 350 hours—or fifty times the length of service of the best belt when the tests began! At this point the belt manufacturers came into the picture, and coöperating with the General Motors engineers developed belts which run over 800 hours. And the end is not in sight.

The main reason which led the heating and piping contractors to organize to improve the quality of their

product, is shown in a letter to one of the authors: "Certified Heating came into existence as a means of combating speculative builders and irresponsible heating contractors, who, because they expected the building to change hands at least once before occupancy, were in no way interested in the kind of heating plant installed, or the service rendered. This kind of work was having a serious effect on the entire heating industry and it became necessary to devise an effective means of distinguishing the responsible heating contractor." To the speculative builder, price was the *only* consideration. Here, furthermore, is a case where the interest of the industry and that of the consumer were in the last analysis closely joined.

The General Electric, the Westinghouse, the United States Steel, and the American Telephone and Telegraph companies have splendidly equipped research facilities. The Telephone company has saved \$100,000,000 on one standard device developed in its laboratories—the "repeater" for long distance lines. Its standardized electrical "loading" system is estimated to have saved an equal amount.

One of the great difficulties of non-standard production is that the extra cost of the special variety is usually loaded upon the buyers of the standard article. It has been shown in the fire brick industry, for instance, that special shapes of bricks cost 5 times as much to produce as standard bricks, yet as a matter of business expediency, the price of the freak sizes is set at only 25 per cent more. The loss, of course, is carried by the standard brick. One of the largest plants making filing cabinets worked out a careful cost system covering its non-standard orders. So high was the resulting—and hitherto unknown—cost of manufacture, that the company decided to abandon special orders alto-



gether. There was no market for them at true cost plus a reasonable profit—the price would have been fantastically high.

One of the authors has ventured the suggestion to certain large corporations that they release the information of their laboratories to their employees and their families, in so far as the information had to do with comparative values of consumers' goods. The motion has always been denied. The reason given is that while it would increase the purchasing power of employees, it would surely lead to difficulties with companies who are active or potential customers of the concern maintaining the laboratory.

### *Professional laboratories*

Besides the testing departments connected directly with a few great corporations, there are a number of private testing laboratories who sell their services to anyone desiring them. Some have excellent facilities and do a high grade of engineering work. Some decidedly do not. We mentioned the Electrical Testing Laboratories in an earlier chapter as one of the former type. Arthur D. Little, Inc., is another of the first rank. The total work done by agencies of this character is increasing rapidly—particularly in the up curves of the business cycle. But almost never are the patrons ultimate consumers.

In this connection a significant fact has come to our attention. At least one of these large private laboratories will not longer accept a testing assignment *if the results are to form the basis of a sales campaign*. It has found by bitter experience that its accurate and careful reports have emerged from the advertising copy desk in almost unrecognizable form when ready for popular consumption, and it does not propose to have its scientific reputation mangled in a spirited burst of salesmanship. . . . Which bids us, we

regret to say, beware of test findings as now advertised. One of the great University laboratories has also closed its doors to work of the same nature.

In conclusion it would appear that the private outposts are busy, are helpful, and are steadily extending their influence. Their most effective work is in the protection which they are giving to the intermediate consumer. More and more large private organizations are safeguarding their raw materials and supplies. More and more trade associations are setting up standards of practice which reduce wastes in manufacturing—and sometimes even in selling. All this is excellent so far as it goes; but it does not go far enough to help the ultimate consumer to any great degree.

## CHAPTER XIII

### FIRST AID

Oh Mouse, do you know the way out of this pool?

THE agencies which we have been considering in the last two chapters, form in the aggregate, a significant total. It is evident that the United States contains to-day a series of outposts which are doing sound work in the direction of substituting the scientific method for rule of thumb. The outstanding difficulties with the exhibit are lack of coördination, and failure to pass on results to the consumer in a form he can use. The ground-work is laid, but the walls rise slowly. But already there is dynamite enough in the cellar to shatter Wonderland forever. In the accumulated research of these outposts, sufficient technical information is now on file to deflate and destroy the great majority of selling games; the bulk of poetic advertising; the massed magic of salesmanship. But it lies in files marked "confidential," and much of it is going to stay there.

Apart from the work of the Department of Agriculture and a few bureaus such as the Public Health Service, the *needs* of the consumer, as distinct from his expressed wants, are little considered. There is no compelling reason why they should be considered. He has no representative on the Board of Visitors of the Bureau of Standards, or of the great private laboratories. He does not even know that work of such immense potential value to him is going on. Even if he did know, there is not much he could do about it unless he organized a sufficiently arresting demand.

Due to lack of coördination, many of the present laboratories and research bureaus are duplicating work. Identical tests, identical analyses of material are being conducted not only in two places, but in three, four, sometimes a score of places. Each requires its own staff of experts, its own specialized, and often costly, equipment. X, an automobile manufacturer, will undertake, let us say, a survey of lubricating oils on the market, when Y has already followed Z in making a complete and conclusive study. A chemist may analyze two samples of the same product for two competitors of the firm which made it. Perhaps five times as much work is now done as is necessary to gain equal results if the outposts could be coördinated. Or to put it in a more significant way; five times the information could be secured with the same aggregate staff of experts.

One obvious way to cut the waste of duplication is to set up one group of laboratories and specification bureaus for a whole industry, under the auspices of a trade association. As we have seen, a small beginning is being made in this direction. Another method is to strengthen college and university laboratories so that they may act as testing agencies for their locality. The Bureau of Standards is the institution best equipped to correlate such activities; to guide them to those facts most needed to fill the gaps in industrial knowledge; to guard them against duplicating another's work; and perhaps above all else, to furnish the pure science and sound theory upon which the testing technique, if it is to be effective, must be based.

In addition to these very general suggestions, dealing chiefly with the waste of duplication, we have certain proposals to present which apply more specifically to the consumer. They may or may not prove in the nature of "first aid," but they are the measures which a rather careful canvass of the total field has brought to light. May they

serve as a preliminary to the work of better men. First a word as to the information now available.

So far as is known to the authors there is but one federal Government service from which the consumer can secure direct and useful information about commercial articles identified by name and brand. This is the list of approved instruments, machines and equipment for use on vessels, put out by the Steamboat Inspection Service. In case of equipment failures the specific firm at fault can be explicitly identified. Unless the lay consumer, however, goes in heavily for steam yachts, the information does not help him much—save for the one item of fire extinguishers. If you want to know what the Bureau of Standards has found out about fire extinguishers, and its specific recommendations resulting therefrom, the Steamboat Inspection Service can tell you.

The federal "general supply schedule" gives considerable information regarding approved or accepted products, but as the Government buys so infrequently on brand names, the general consumer is not greatly benefited by studying the schedule. He finds little he can identify with the goods for sale along Main Street. The Bureau of Mines approves certain types of equipment involving explosion hazard. If you wish to know the safest railroad to ride upon, and to ship your goods over, the Interstate Commerce Commission can tell you, as a result of its safety appliance and accident statistics.

All other federal publications with respect to the performance of specific goods or services, confine their information, so far as we know, to purely *negative* conclusions. You will find in Food and Drug Act legal cases, and in the reports of the Federal Trade Commission, a good deal, first and last, about the dubiousness of the product of a certain



named manufacturer or dealer, but nothing at all about where to turn for a reliable product to put in its place. The inquiring consumer, if he wants to wade through the docket, can find what *not* to buy, but nothing at all about what *to* buy.

By and large, state and municipal governments—with the outstanding exception of North Dakota—furnish even fewer tangible guides to buying than does the federal Government. There is some negative help, but little positive.

Among the private outposts, we note here and there a public release of helpful facts. The National Fire Protection Association can tell you a good deal about the fire hazards of specific building materials. It publishes a pamphlet, for instance, on the "Menace of the Wooden Shingle"—and we have traced no subsidy from the copper and zinc associations! Impartial, honest, competent advice it is. The economic interest of the fire protection association lies in fewer and less destructive fires. By and large this coincides with the interest of the people who live in houses—and who have to leave them at all hours of the night, in all degrees of undress, when they burn up. The same association publishes frank and critical statements covering the per capita fire losses of various cities; facts by no means palatable to local boosters. The American Medical Association, as we have seen, has neither the slightest hesitancy in calling a spade a spade, nor yet in its list of "New and Non-official Remedies," in giving implicit approval to safe and sound medical products by name and maker. But the latter remains a little technical for the ordinary citizen marching into a drug store. The United States Pharmacopœia is a reliable though limited source of information about standard drug products.

When we contrast the specific information now released—excellent as it is in certain cases—with the total information

and misinformation imparted by a billion odd dollars worth of advertising, it shrinks into relative insignificance—a few glowworms to guide a forest path at midnight. When we contrast the total protection furnished the consumer through pure food laws and the like, plus the standardization, simplification and specification work now done on his behalf, the amount of light visibly increases—shall we say a lantern every half mile? But the balance remains overwhelmingly in the advertiser's favor. Our "education" now lies chiefly in his hands.

There are three essentials in any comprehensive plan for giving the ultimate consumer the benefit of the test and specification method. *First*, the setting up of specifications by qualified experts—specifications for textiles, clothing, soaps, paints, boots and shoes, foods, building materials, what not. *Second*, the manufacture of those goods on a large scale at a relatively low unit cost, and their entrance into channels of distribution only after effective laboratory check of their conformance to specification. *Third*, the provision of means by which the fact of manufacture, verification and distribution in accordance with specification, may be made apparent to the buyer. This involves a fool proof system of brand marks, labels, or other clean cut method of identification. In the policing of such methods, the trade associations, the Better Business Bureaus, the Government, can all help.

Initial steps toward such a plan have already been outlined by Dr. A. S. McAllister of the Bureau of Standards. He has proposed a scheme of certification by which the producer who is willing to supply goods made to a given Government specification may file with the Bureau a statement to that effect. Consumers, upon request, would be given a list of such producers. Buying their products, the consumer can obtain a guarantee in effect—not by the

Government but by the seller—that the goods he receives are up to the quality the Government demands. The plan as it stands will help large intermediate consumers far more than the ultimate buyer. Further it contains no provisions for insuring that what is promised will be actually lived up to, and thus may open the door for grave abuses. This might be remedied by giving the Federal Trade Commission power to take legal action against firms which violate the certification agreement. In any event, the plan falls short of a comprehensive program.

### *Impartial laboratories*

Who shall run the laboratories that are some day to be set up in the consumer's interest, and above all guarantee them that scientific impartiality without which they will speedily degenerate into a farce and a scandal? Any given trade association could never, with the best intentions in the world, be above suspicion. A federation of trade associations comes nearer reality—but still, as sole arbiter of the consumer's interest, leaves something to be desired. As *jointly* responsible in the conduct of a great system of public laboratories, a strong case can be made for trade associations.

The laboratories of universities, particularly state universities, have much to recommend them in this connection. Nor is there any good reason why two birds cannot be killed with one stone, by allowing students to do most of the testing work, as regular class exercises. To determine the excess alkali in a sample of soap flakes, the amount of palm and olive oils in Palmolive soap, or the amount of rug fiber picked up by a vacuum cleaner, are jobs which are not only interesting in themselves, but which will teach under-graduates more about the social significance of chemistry, physics and microscopy than all the text books

ever written. It would almost be worth while going back to college for the opportunity to make a "deadly-parallel" of the claims versus the facts in a dozen of the biggest selling radio receivers; to find out how many of the advertised, brand marked, silver polishes are poisonous, and how many are sold at ten times the value of their ingredients; to determine what x in y oil does to a good clock or a rifle. . . .

Women teachers of home economics are already interested in the technique. Several, such as Miss Pauline Beery of Pennsylvania State College, have gone to a great deal of trouble to secure testing information and to use it in their courses. A closer tie between the home economics department, and the physics, chemistry and engineering faculties, is one of the most important advances that can be made. Moreover, if the appropriate departments of state universities, putting aside their traditional dread of controversial issues, could constitute themselves centers of information to the people of their communities, covering articles commonly purchased—in the same manner that agricultural experiment stations handle such products as feeds, fertilizers and seeds—another long step forward would be registered.

Miss Beery in her excellent book has suggested that cities and towns might open laboratories to serve the community in testing coal. There is no inherent reason why such service might not be extended to include foodstuffs, soaps, linoleum, and other common articles. Municipal politics being what they are, we admit the experiment would be risky in some communities, but it is undoubtedly feasible in others. Bribery and intimidation could doubtless function, but at a far greater risk of public indignation than in most municipal matters. If M Brothers coal was publicly listed as high grade, and then was found to choke the furnaces of honest citizens with slate—the outcry would be

swift; and there could not be the slightest doubt as to what parties had been doing the second story work—the coal company, and the man who made the tests.<sup>1</sup>

A multi-millionaire of an inquiring turn of mind could probably perpetuate his name to eternity by endowing a laboratory and information bureau on a scale sufficiently large to make a real impression upon the buyer's consciousness. "The Consumers' Foundation," he might call it. Under a group of public spirited and disinterested trustees, chosen mainly from the professions, its experts could afford to tell the truth and nothing but the truth, and they could furthermore put their efforts into fields where the protection now afforded is particularly inadequate. Articles that bulk large on the family budget and which are not now covered by analysis in either Government or private outposts, should probably be the first concern of such a laboratory. Business houses desiring sincerely to support the Foundation's work—and there would be many of them—could be publicly listed as preferred suppliers if and when they met the laboratory's requirements. Subsequent failure to meet requirements would mean prompt removal from the list and widest possible publicity for the make and brand removed. There would be no compulsion in any of the Foundation's work. It would be based squarely on the assumption that facts duly published would bring their own reward. If the institution were large enough, and the staff authoritative enough to command wide respect, one suspects that the effect of its facts would ultimately be very great, even upon the advertising agencies.

The better class of newspapers and magazines would be forced to publish dramatic findings about specific goods, even in the face of roars from the advertising department. Like the findings of the Federal Trade Commission in respect to Ostermoor mattresses, and P. and G. Naphtha Soap, such



information is news in the best journalistic sense of the word. It is probable that the idea would spread rapidly, and that the exchange of information about specific products between the Foundation's laboratory and others acting in the public interest, would go a long way toward deflating poetry in the advertising columns. In such fields as quack toilet preparations, soaps, tooth paste, hair dyes, complexion bleaches and "skin foods"—many of which, as we have noted, contain harmful mercury salts, wood alcohol, or other poisons—the laboratory could produce savings in family expenditures and in public health generally, of the first importance. Meanwhile it would act as a bulwark for honestly and competently conducted business.

### *Mail order houses and department stores*

The strategic position of these great institutions in the market, warrants some specific consideration. Their economic interests are far from being identical with those of the ultimate consumer, but they run close enough in certain respects to give hope for considerable coöperation. Such organizations are sufficiently large to reap great benefits from the testing technique when applied to their own buying. As mass distributors they have a vital interest—quite unrealized to be sure—in the standardization method. Finally they have unparalleled avenues of publicity at their command wherewith really to educate consumers in differentiating between sound and unsound goods—if and when they so elect.

The mail order house is peculiarly dependent upon standardization, though largely unconscious of the fact to date. If it can rely on the products it buys from the manufacturer, return of goods by its own customers tends to shrink to a minimum—thus aiding economy in transportation, bookkeeping, and overhead generally, to say nothing

of increased satisfaction. What indeed, with the best intentions in the world, can Sears Roebuck now say about varnish except, "extra durable floor varnish . . . our best grade . . . will keep floor unmarred and beautiful for years." What can be said about paint except a promise to furnish new paint free of charge "if Seroco does not give the service you have a right to expect." Unless the paint is extraordinarily bad, how can a layman honestly avail himself of such a guarantee? Conditions of application, character of exposure, the phrase "service you have a right to expect"—each varies by a factor of several hundred per cent. It is only fair to say, however, that certain mail order houses take their guarantees far more seriously than do most other merchants.

Why not cut the Gordian knot and list paint which meets the specifications of the Government service? If the proper Government paint for a given service is selected (and there are already comprehensive reports available for assuring such selection with precision) nobody's personal guess as to whether the paint has given satisfaction is required. The guessing has been completely eliminated in advance, by means of careful experiments under standardized exposure conditions. The catalogue writer's phrases are irrelevant and immaterial. The paint is good by definition, and always will be good so long as it is made to Government specification.

Mail order buying has great possibilities for economy in staple goods susceptible of exact description. Failing which procedure it tends to become just another variation of the common selling game; a contest in superlatives, a putting of one's best foot forward, a dealing in largely meaningless if well meant "guarantees." It attracts accordingly, only a fraction of the consumers who might buy by mail if they could be more precisely assured of what they were going to

get. There are enough good specifications already available to build a sizable mail order business on this principle alone. There is a genuine public service as well as a fortune in it for the man who first makes a beginning. At a very moderate relative cost, hundreds of other specifications could be set up in coöperation with the Bureau of Standards, the Bureau of Home Economics, and the trade associations. What is the burden of writing the most careful specification possible for aluminum ware—say \$5,000 at the outside—in contrast with a turnover of a half million dollars worth of such ware a year in a single department store? Or the cost of merely *selecting* a series of six or eight authentic insecticide formulas, to a store which sells \$1,000 worth of such products a day?

The department store is not so peculiarly susceptible to the method as is the mail order house. Many of its goods have a distinct fashion or fad appeal, many others are almost entirely in the category of personal taste, others are frankly luxuries. Nevertheless, a substantial proportion of its business—staple textiles, hardware, cooking utensils, seeds, garden tools, sewing machines and other household appliances—is well within the specification limit, and capable of furnishing immense savings in retail distribution. It will be objected that fewer types and more durable goods will reduce turnover, and that gross sales—the sacred cow of the retailer—will go into a decline. Which brings us back to the “make work” theory—that production is good in itself regardless of its value to consumers. Of which theory the hiring of the entire population to bail out the ocean, or to build plaster pyramids, would be the perfect consummation. Man does not live to keep money in circulation; money circulates to help *him* to live. If it does not, the whole economic system had best be scrapped as the last word in topsy-turvy nonsense, and something more

approaching common sense introduced. There are altogether too many sacred cows now enshrined in the market place.

Standards for useful goods in retail trade might cause a temporary tempest—even as did Mr. Darwin—but the firms first to adopt them in a thoroughgoing and fearless way will presently need larger quarters. To be concrete: Where would you buy your next vacuum cleaner if you were absolutely sure that a certain store had selected one or two makes as the very best at a given price, on the basis of impartial and competent tests? Or woolen blankets, or boots, or kerosene stoves, or typewriters?

*What, if anything, is a "guarantee"?*

We know what a guarantee is in law; but what is it in Wonderland? How does it influence, as the psychologists say, tangible behavior? So far as the ultimate consumer is concerned, almost not at all. It is usually just another selling word; sound and fury signifying nothing. If an occasional disgruntled customer protests his "guaranteed purchase," it is a small matter to refund his money after assuring him that he has used the product wrongly. Meanwhile the proceeds can be kept, from a thousand others who have no means of knowing if the product is good or not; who have not the time or initiative to protest if they find it definitely bad; who have forgotten where the purchase was made; or who have lost the sales slip. A manufacturer can, and does, grow wealthy selling 50 cent articles which are not costly enough to warrant the trouble of calling his "guarantee," however worthless they may be.

Here again the salesman capitalizes his knowledge of the buyer's psychology. The words "fully guaranteed," or "warranted satisfactory," look well and mean little. The percentage of cases in which the seller will be called upon

to make cash restitution is at once calculable and negligible. No one likes to admit, even to himself, that he has been duped, and so silence is the human rule. Such phrases—with a few eminent exceptions of course—stand on a par with the other superlatives used in describing goods. The courts refuse to take seriously the man who falsely claims his product to be “the best in the world,” holding that he is just indulging in natural competitive exuberance. And so with “guarantees,” in fact if not in law.

One large retail clothier in New York who had for years emphasized the slogan “your money back if you’re not satisfied,” simply declined to consider any kind of an adjustment when it was pointed out that a certain suit had worn threadbare in an amazingly short period. The customer was told that he “should not have bought that kind of cloth.” . . . But not a word of that important information was vouchsafed at the time the sale was made. Another large firm on receiving a complaint, with details of date and place, covering the purchase of a defective radio battery, replied that that was what must be expected when its wares were bought at cut-price stores.

In respect to the women’s magazines which “guarantee” their advertising pages: What precisely does that guarantee mean for such products as “Harriet Hubbard Ayres’ Face Cream,” “Ingram’s Milkweed Brand Cream,” “Othine,” “Stillman’s Freckle Cream,” “Canthrox,” “Kolor-Bak,” “Newbro’s Herpicide,” “Van Ess Liquid Scalp Massage,” “Wildroot Dandruff Remedy,” “Mary T. Goldman’s Gray Hair Color-Restorer,” “Boncilla,” “Mineralava”? These and many other advertised products are listed as “cosmetic nostrums and allied preparations” by the American Medical Association, or by Dr. Harvey Wiley in his “1001 Tests”—and all are to be found in the advertising pages of “quality” magazines.



The best "service"—a word now almost battered beyond recognition—is to supply an article that is explicitly represented to begin with, and that will stay sold because it has been inspected and tested to conform to such representation. The man who takes back a defective article and receives his money—or part of it—is not compensated for the merchant's mistake or ignorance. Who is to pay for his time and trouble experimenting with the article, wrapping it up and taking it back, hunting around for a satisfactory substitute? Worse still, a householder who has an electric refrigerator that works badly cannot be contented by the sending of one repairman after another "free of charge." Who is to pay her for the spoiled food, and for the kitchen in an uproar every time the "service" man arrives with his wrenches? "Service," "guarantee," "money back"—are all devices for locking the stable door after the horse is gone . . . again, we repeat, with a few honorable exceptions. Standards and specifications lock the stable with the horse in it.

### *Organizing the consumer*

Impartial laboratories, the release of information, changed tactics on the part of mail order houses, department stores, and trade associations—all depend in the last analysis on the consumer's demand for them. Everyone reading this book will be disposed to grant, as an individual, that something ought to be done; that the injection of the scientific method into the current customs of the market, means money in his pocket as a consumer. Can this feeling, intense or vague as the case may be, be organized into an effective demand? Heaven knows. The consumer has been defined as "a person of sluggish intellect who does not know what he wants." . . . Which is not a very hopeful start. The authors have a distinct impression, however, that some time

in the next decade, American consumers are due to reach the saturation point in trying to digest competitive advertising, and will begin, in increasing numbers, to demand more facts and less poetry. But the authors, blinded by their enthusiasm, may be wrong. Mr. H. L. Mencken holds that the average citizen is an eternal boob, desolate without his daily dose of bunkum. But a greater man than Mencken founded his life on the principle that you cannot fool all of the people all of the time.

If a million citizens could be persuaded to invest a dollar each per year for verified facts about their purchases, wonderful things could be done. In relation to service rendered, scientific work is normally the cheapest thing in the world. It is probable furthermore that a service paid for will be more extensively used than free handouts by the Government. The kind of information which is most useful, is not a learned treatise on the histology and etiology of a given article, but something translatable directly into an order on a Main Street store. It should not be cluttered with all the advantages and disadvantages of this and that. It should be a plain statement of the kind of paint or soap or tooth brush to be asked for. From time to time, of course, information in the shape of warnings against very deleterious or vicious products—printed in red perhaps—might be in order.

If consumer's coöperative societies flourished in the United States as they do in Denmark, such might easily extend their functions to cover the case. In due time we may have a strong coöperative movement; it appears to be growing steadily, but it is still too weak to take on much in the way of added responsibilities. The million consumers with their dollar bills will probably have to be freshly organized—if at all. When one thinks of what the Red Cross, the Y. M. C. A., and others have done in the way

of organization, the project does not seem altogether hopeless. . . .

The savings to any individual will come not so much from the isolated fact that he demands, and receives, Doe's Government specification paint from his hardware merchant, but rather because enough people make the same demand, to force manufacturers and dealers to admit a business advantage in marketing such goods. Even if Roe does not follow the Government specification exactly, he will be constrained to follow the specification method, and manufacture to a sound and stated formula. Thus real savings will grow out of a general call for protected goods, and a lessening of the call for the other kind. Competitive wastes through the making and selling of non-essential variations, and of inferior products, will diminish to the point where the cost of living is genuinely affected.

In most goods there is room for more than one grade. With such, the use of several specifications, provided only that it be a limited number, may be the mechanism by which a real system of related and coördinated grades will ultimately evolve. Such steps have to be taken one at a time. There are as yet extremely few cases where one authority has prepared specifications covering *all* the needed grades of the given article. Federal specifications for paint and soap are among those that come near to doing so.

A labor union or a local farmers' group could carry on at a small cost an advisory service, provided sources of information were available from which the basic data could be secured. Such sources are now available for a few things, as we have seen, but there would have to be more before it would be practicable for a local union to act as clearing house. A powerful international union, the American Federation of Labor, the National Farm Bureau Federation, could begin to-morrow, if it chose, with wide

effect. Wages may be increased as readily by expanding the amount and serviceability of goods received for a week's wages, as by expanding the dollar in the pay envelope.

Women's clubs have the leisure, and in the aggregate, the funds to promote their members' interests as consumers. It is estimated that women do 90 per cent of all family buying. . . . The Consumers League might conceivably broaden its program by analyzing goods, as it now analyzes the effects upon women and children of producing them.

One of the authors with the encouragement of a group of his neighbors, has established an experiment station in connection with a community church in White Plains, New York. It may be worth watching as a point of departure for other groups. Two lists of goods are being prepared, usually giving maker and brand. The first list carries products considered to be of good value in relation to their price; the second, products one might well avoid, whether on account of inferior quality, unreasonable price, or of false and misleading advertising. The basis for judgment lies in the work of the outpost agencies, already reviewed. The help of high school teachers of chemistry and physics is also to be enlisted for analysis and performance studies.

Fortunately there are certain cases where a whole group of commodities can be covered by one recommendation without the necessity of investigating private brands. There is no need for instance to buy any of the various insect spray materials now on the market at \$4 a gallon up, if the householder is willing to invest 50 cents in half a pound of pyrethrum flowers ("insect flowers") and a gallon of kerosene, allow the mixture to steep for three days, and pour off the liquid for use. If he wants to improve the smell let him add a little cheap perfume, like oil of sassafras. Nor is there any need to investigate the sundry up and coming devices guaranteeing to save 10 to 40 per cent

of fuel by virtue of a handy little attachment on the smoke pipe of your furnace. They are all unadulterated bunkum. Carbon tetrachloride can be recommended as a remover of grease spots, thus laying in their graves a whole family of identical if not inferior proprietary dopes—based on this cheap liquid, and selling in a dandy little bottle for many times its market price. Household lubricating oil is best provided by a light automobile crank case oil, thinned slightly with sperm oil, or even kerosene. Disinfectants are best bought at the drug store under the pharmacopœia name. (See Farmers Bulletin 926.) Prepared chalk will serve with safety every purpose of those who must have tooth paste or powder, except the candy flavor. The chalk will cost you a tenth of what you pay for the advertised product, and has the added advantage of being assuredly harmless. Moth balls in a tight box or trunk will really kill the larvae—which is precisely the method used by some fur storage firms.

Two moderately priced makes of vacuum cleaners are known to be good enough for use in office building janitor service—which is way above the standard of normal home performance. Ethylene glycol is safe and effective as an anti-freeze mixture for automobile radiators. Wheatena and Shredded Wheat Biscuits are good breakfast foods, made of the whole grain. Ivory is a good soap, one of the types purchased by the Government. Everready and Burgess B batteries are good and economical for radio use. Vulcan Smoothtop gas ranges are among the safe ones of this somewhat risky type of stove; electric toasters and grills having Chromel A or Nichrome IV heating elements will last almost indefinitely without burning out; three or four well-known firms are willing to supply paints, varnish and enamel to Government specification. The Scoe is a real carburetor for your Ford; the beautiful and durable Bilt-



more hand woven homespuns made at Grove Park Inn, Asheville, N. C., contain nothing but fine new wool dyed without the use of aniline dyes; Victor and Columbia phonograph records are scientifically produced and will give superior reproduction on the Orthophonic phonograph; Pyrene, Fyre-Fyter, Firegun and La France are good fire extinguishers of the carbon tetrachloride type. . . . Of such matters are these White Plains lists composed.

The community is definitely interested; buying is already influenced by the information released. But the experiment is still too young to give any final evidence of its practicability.

The consumer can be organized by the million to jump through the hoops of the advertiser—dosing himself with dangerous nostrums, brushing his teeth with chalk and scent and soap at fabulous prices, walking Heaven alone knows how many aggregate miles for a cigarette. Can he be organized to better his health, increase his real wages, and get a dollar's worth of value for his dollar?

Perhaps.

But of one thing we may be sure. The time has gone—possibly forever—when it is possible for each of us to become informed on all the things we have to buy. Even the most expert to-day can have knowledge of only a negligible section of the field. What sense then in a specialized industrial society if each individual must learn by trial and error again and forever again?

Furthermore, though it is now possible to make floor wax, fertilizers, insecticide and certain other products cheaper and better at home than we can buy them, from any long range point of view this is a ridiculous procedure. Properly organized, without too great a load of salesmanship, mass production ought to vanquish cottage industry

every time. We already have an enormous investment in industrial plant; it is clearly better to keep that investment functioning than to try and set up little factories in every home.

Some day, somewhere, somehow, science must step into this wilderness, and provide the knowledge wholesale that no one of us can ever hope to learn at retail, and which we now try to acquire at such a grievous, needless cost.

## CHAPTER XIV

### IN SUMMARY

"Tut, tut, child," said the Duchess, "everything's got a moral, if you can only find it."

OUR whole thesis may be expressed in a hypothetical case. Two men are discussing the merits of a famous brand of oil. Says one, "I know it must be good; it sells a million dollars worth a year. You see their advertisements everywhere." But the other says, "I do not care how much it sells. I left a drop of it on a piece of copper for 24 hours, and the drop turned green. It is corrosive and I do not dare to use it."

In America, bigness is the test of success. A firm with huge sales must have merit, regardless of the methods by which the sales have been built up. The first speaker followed the crowd, but his friend disregarded the fact of bigness and went after the facts of chemistry. As a result, he arrived at a precisely opposite course of action from the common one. Sometimes the crowd is right; often it is wrong. It remains for science to read the balance.

If the rules of the game should shift from size and turnover, to chemistry and physics, how many of us would start to walk in the opposite direction? Millions upon millions. If science could displace magic in salesmanship, the whole curve of consumption would change. Science has taught the manufacturer how to plan for mass production, but there is as yet no science, broadly speaking, in consumption. This book has been a plea for a drop of oil on a copper plate

against a sales summary and a page spread; a plea for a genuine science of buying and consuming.

We have seen how advertising has varied roughly with the technical complexity of the article to be sold. The less chance the consumer has of knowing the technical facts underlying a product, the easier it is to describe its merits. Such descriptions are difficult to verify. Automobiles, paints, vacuum cleaners, radios, electrical washing machines and refrigerators, are complex and highly advertised articles. Cement, structural steel, fence wire, incandescent lamps, sugar, salt, tincture of iodine, electric irons, are simpler or better understood commodities, and not so widely advertised.

We have seen how the New Competition has moved down upon the market in the last few years, linking whole industries in a giant struggle to secure the largest possible share of the national purchasing power, and how instalment selling is the latest weapon in that warfare. We have seen how quality varies independently of price, and how, for many commodities, high prices are absolutely no assurance of high value. We have noted how cheap it is to produce things under the principles of mass production, how great margins are often added to manufacturing cost before the retail price is reached, and how infrequently the economies of mass production are made manifest in the cost of living of the ultimate consumer in anything like the ratio which ought to obtain. We have seen something of the extent of adulteration and misrepresentation, and something of the more refined devices now current for short measuring and short weighing. We have stood perplexed before the shifts and changes and meaningless duplications which go on behind the massed phalanx of brands and trade names, and observed how difficult it often is to recognize the identity of tweedledee and tweedledum. We have noted the chief

methods by which super-salesmanship first inclines us to tweedledee, and later—if the appropriation is bigger—throws us into the arms of tweedledum.

We have noted how sales are pushed by the invention of dubious new uses for a given product. (A recent case is the drive to extend the functions of constipation oil made from petroleum, to cake shortening and the lubrication of sardines in cans!) We have peered into the lower depths of merchandizing—the industries which furnish the 23 jewelled watches and Egyptian diamonds for the confidence men, and which no law can touch; the industries which sell us deadly and dangerous things with insufficient warning, or none at all; the industries which stock the stores on the meaner streets of any city with articles worth zero, and less than zero, for the poor to buy. We have seen something of the bitter humor and the tragedy of the patent medicine traffic.

In the face of these forces, consumers make their blundering way, so many Alices in the Wonderland of salesmanship; they buy not what they freely want, but what they are made to want. In the office of the advertising agency, human psychology is an open book. There is no strand or chord of it upon which the advertiser has not learned to play. And as one of the major chords is flattery, on the whole we like this Wonderland. It is stimulating, colorful, romantic. To read the rear ninety per cent of the *Saturday Evening Post* is the next best thing to going to the movies. We know that we are becoming constantly disillusioned with nearly every sort of thing we buy, but how charmingly is it done—what carloads of free samples, elegant handbooks in four colors, alluring packages, "service," hostesses, rest rooms, manikins, quick deliveries, sympathetic understanding, are ours! While the charge for it all comes painlessly camouflaged in the total price.



But there is just a chance that the gentlemen who run this unparalleled side show may be putting on the acts a little too fast; just a chance that the superlatives have almost reached the limits of registering on the brain; that the sheer multiplicity of brand names dizzies the spectator instead of seducing him; that something in the nature of a *reductio ad absurdum* is not so far around the corner. . . . In brief, that science has a fighting chance. In that hope this book has been written, but its authors have not deluded themselves with the belief that the triumph of science is inevitable. At least, as Mr. Thorstein Veblen would say, just yet. Sooner or later we do believe, and that confidently, that the scientific method will make itself felt in the consuming of things as it has already done in the producing of them.

Following the description of Wonderland, standards and standardization were considered. We tried, in Chapters IX and X, to show that standardization, far from being a blight and a bugbear, may become one of the most helpful things imaginable. It all depends upon the provinces it rules over. Standards in weights, measures, terminology, engineering practice, safety measures, machine parts, sewer pipes, paving brick, and in all manner of industrial processes, are, if wisely designed, most excellent. Standards of quality, of fineness, of clear and true description, for all manner of finished products, are also manifestly excellent. What artist would object to a certification of the quality of the paint that he uses? What mother resents assurances that the milk she is feeding her children comes from clean and inspected dairies?

But standardization of design and pattern of clothing, houses, furnishings, from the standpoint of submerging individual tastes and differences in a vast pattern of uniformity,

is an intolerable thing. Syndicated editorials and "boiler-plate," standardized revues and movie plots, standardized gum chewing, permanent waves, automobile talk, short skirts—for ladies with fat legs—best sellers, after dinner speeches, ready-made Western Union telegrams (suitable for births, deaths, Christmas and Mother's Day); standardized golf pants, cocktails, high heels, Arrow collars, coon-skin coats, alligator shoes, breakfast alcoves, business men's lunches, rose-bud garters, funeral chapels, step-ins, tabloid murder cases, sex appeal, subway jams, road houses, sob sisters, near-Circassian-walnut furniture, table d'hote dinners, bathing beauties, batting averages, frat men, conferences, bridge parties, lodge meetings, prepared breakfast foods, primary school instruction, booster clubs, comic strips, sleek hair, popular songs, cemetery sculpture—all such tend to reduce us to one dead level. In which no influence is more powerful than that of advertising and canned publicity. "Repetition is Reputation."

Again it is our hope that more standards for industrial processes and for quality in goods will eliminate sufficient waste and lost motion to provide the leisure and the independence for *less* standardization and more individuality in the vastly more important business of living. The deduction is certainly a logical one, but the eventuality, we admit, is on the lap of the gods.

We have seen what standards have already accomplished in the field of mass production, and how the trade associations are using them for their own, and less often for the consumer's advantage. The work of the gas association in protecting the consumer against carbon monoxide poisoning in the construction of gas heaters and ranges, was a striking case of helping both.

We have reviewed the outposts, both public and private, which have adopted the philosophy of standards and which

are now trying to inject science into the field of buying. The work of the Bureau of Standards which the Government considers saves \$100,000,000 annually, largely by deflating salesmanship in the laboratory, has impressed us particularly. We have seen what lies behind the "cease and desist" orders of the Federal Trade Commission; we have watched North Dakota forcing down the levels of misrepresentation, and improving quality in gasoline, fertilizers, paint and foods. The spirited attack of the American Medical Association on the patent medicine brethren, the sound work of the Society of Automotive Engineers, the findings of some of the great corporation laboratories—all have contributed their quota to more knowledge for consumers.

Finally a rough canvass has been made of such legal standards as have already been set up in federal and local pure food and drug acts, grading laws, and the like.

Science, it is clear, has already gained a foothold here and there. In the preceding chapter we have indicated some possibilities for increasing and coördinating these footholds. It is for the reader to judge their merit. If some of them should prove workable, or if better methods looking to the same end, should prove workable—there are the following possibilities of savings which science, functioning through the medium of impartial tests, standards, and specifications, offers to the consumer:

1. Better quality, durability, and real fitness for specific use.
2. Lower production costs by virtue of simplification, and steadier demand for goods made to mass production.
3. Lower distribution costs due to the deflation of competitive advertising, the deflation of meaning-

less variations of the same thing, the end of brand monopolies (except those due to patentable novelty), reduction in retailers' stocks, less expense in fancy packages, in shipping and cross hauling.

4. An immense saving of time and effort in the sheer business of shopping and buying.
5. The elimination of actively harmful and dangerous products.

It is the consumer's move. If he wants to leave Wonderland there is a way out, and the clear possibility of drastically reducing the cost of living. He can get his money's worth if he is willing to organize to get it. The market always responds to organized pressure. Pending the coming of organization, the individual can create no little nuisance value in the right direction, and inform himself besides, by adopting some, or all, of the following suggestions:

Ask advertisers to produce the scientific facts upon which their claims are based.

Ask the same of door-to-door canvassers.

Ask the same of storekeepers and dealers.

Refuse to buy staple articles like cloth and soap powder under the cloak of a brand name which may be used to conceal the real character of the article and give extra scope to the advertiser's fancy.

Ask your Congressman to obtain the release of Government information, particularly that of the Bureaus of Standards and Chemistry, on goods by maker's name.

Insist through your Congressman that Government bureaus work on the things that ultimate consumers need, as well as on power plants and reinforced concrete.

Get competitive sales arguments together and watch them flatten out.

Bring about real price competition by determining the specific need to be filled and then securing competitive prices thereon.

Refuse to deal with firms making fantastic or misleading claims or guilty of unfair competition. Write them to that effect.

Call the attention of editors to misrepresentations either known or apparent in advertising. You will find such, we believe, in every popular magazine.

Encourage your local sealer of weights and measures. Give him more work to do.

Encourage the Better Business Bureaus. Give them more work to do.

Encourage your local food control official. Find out what his laboratory is doing; or why he has no laboratory.

Read labels carefully; compare them with the advertising. Discrepancies between the two measure in part the extent of misrepresentation. Insist on more specific labels.

Place your reliance upon labels rather than sales talk. If a blanket is all new wool you may be sure the label will so specify it.

Look for weights on package goods; figure out how much you are paying *per pound*. Then look at your bank balance.

Ask why baking powder or bread comes in 14½ ounce packages instead of pound packages, and why soap and a host of other things have no quantity marking at all.

Write the American Medical Association for informa-



tion on the quality and character of advertised drugs and medical appliances. Tell your druggist and your neighbors what you learn.

Write for Government bulletins which discuss specific products, or groups of products. Don't depend on the soap manufacturer for your home laundering hints.

When you hear the word "guarantee," laugh heartily.

When you read a testimonial, laugh heartily. Remember Famous Names, Inc.

Ask the nearest college to run a test for you. It will educate the students as well as yourself. Let manufacturers know the result of the test.

Get high school teachers to carry on testing work in their classes. Encourage them to seek advice from Government and college experts.

Encourage manufacturers of sound products, competently and honestly described, to keep it up. Buy your goods from them.

Make your own products at home until certain industries—such as insecticides, floor waxes, furniture polishes, cleaning compounds, fertilizers—improve their standards, and pass on the economies of mass production. The Government will tell you how. This is necessarily only a stop gap.

Start an experiment and public information station along the lines of the White Plains station described in Chapter XIII, and let local dealers and manufacturers know what you are doing.

Do these things in the name of your club, church, grange, union, or trade association, representing real buying power.

Never believe the findings of a test as advertised. They are often doctored.

When making a purchase, keep your mind on the qualities *you* are out to buy. This guards you from the irrelevancies of sales talk. Forget "From France Comes the Gift of a Smooth Skin"; think of lather, freedom from alkali, and price per pound.

Never believe advertisements of competitive goods (except in scientific journals), and say so, loudly, clearly and on every possible occasion. Thus may ultimately come advertising that you can believe—copy backed by impartial scientific authority.

These instructions will make the supersalesman smile—as he has every right to do to-day. But some day he may smile out of the other side of his mouth.



## REFERENCES BY CHAPTERS

### CHAPTER I (Pages 1-26)

- <sup>1</sup> *The American Mercury*, October, 1926.
  - <sup>2</sup> *The Christian Science Monitor*, July 16, 1926.
  - <sup>3</sup> *How to Sell*, Mt. Morris, Illinois, issue of December, 1926.
  - <sup>4</sup> *Harvard Business Review*, April, 1926.
  - <sup>5</sup> "Common Sense in Mouth Hygiene," *Hygeia*, October, 1926.
  - <sup>6</sup> Bureau of Standards, Technical News Bulletin No. 95, March 10, 1925.
  - <sup>7</sup> Technical News Bulletin No. 102, October, 1925.
  - <sup>8</sup> Bureau of Standards, Circular No. 70.
  - <sup>9</sup> *New York Herald Tribune*, February 23, 1926.
- 

### CHAPTER II (Pages 27-44)

- <sup>1</sup> O. H. Cheney, "The New Competition," *Nation's Business*, June, 1926.
  - <sup>2</sup> *Electrical World*, October 23, 1926.
  - <sup>3</sup> *Harper's Magazine*, December, 1926.
- 

### CHAPTER III (Pages 45-60)

- <sup>1</sup> U. S. Public Health Reports Reprint No. 335, August, 1916.
  - <sup>2</sup> "Fluosilicates as Insecticides," University of Tennessee Agricultural Experiment Station Bulletin 134, 1926; also letters from Bureau of Entomology, Dept. of Agriculture.
  - <sup>3</sup> Report of Electric Refrigeration Committee, National Electrical Light Association, 1925.
- 

### CHAPTER IV (Pages 61-75)

- <sup>1</sup> *Encyclopedia Britannica*, Article on Adulteration.

## CHAPTER V (Pages 76-93)

<sup>1</sup> Kegerreis, Chenoweth, and Zucrow, "Commercial Carburetor Characteristics," Bull. 21, Eng. Exp. Sta., Purdue Univ., 1925.

<sup>2</sup> Dinsmore, "Pool Buying," National Coal Association, 1926.

<sup>3</sup> Dinsmore, "Milk Price Studies," Edwards Brothers, Ann Arbor, Mich.

<sup>4</sup> News Release of the American Engineering Standards Committee, June 29, 1925.

<sup>5</sup> Williams, Secretary of the Milk Commission, Rochester, in a paper before the Third National Congress of Refrigeration, 1913; cited in Stevenson, "Refrigeration," in *General Electric Review*, July, 1926.

<sup>6</sup> Docket No. 1129 (Federal Trade Commission).

<sup>7</sup> Cook, "Do Your Customers Really Know Your Product? A Scientific Study of the Consumer's Buying Judgment," *Cotton and Its Products*, January, 1926; and mimeographed report "Is the Consumer's Method of Buying Reliable," Teachers College, New York.

<sup>8</sup> Marley, Livingstone, and Gruse, *Society of Automotive Engineers Journal*, December, 1926.

<sup>9</sup> Hunt and Atwater, "How to Select Foods," U. S. Department of Agriculture, Farmers Bull. 817.

<sup>10</sup> Dinsmore, "Purchase Principles and Practice."

<sup>11</sup> "Hotel Soaps and Cleaning Compounds," American Hotel Association Research Bureau, 1923.

<sup>12</sup> Beery, "Chemistry Applied to the Home and Community"; Lippincott.

<sup>13</sup> A. E. Horn in *Proceedings*, National Association of Building Owners and Managers, 1922.

<sup>14</sup> Fourth Annual Report, U. S. Bureau of the Budget, 1925.

<sup>15</sup> "General Schedule of Supplies," issued by U. S. General Supply Committee, Washington.

<sup>16</sup> "Report on Imported Merchandise and Retail Prices," Senate Document, July 31, 1922. 67th Congress, 2d Session. From Treasury Department for use of Senate Committee on Finance.

---

CHAPTER VI (Pages 94-120)

<sup>1</sup> Release of October 1, 1926, Federal Trade Commission.

<sup>2</sup> Release of October 30, 1926, Federal Trade Commission.

<sup>3</sup> Release of November 1, 1926, Federal Trade Commission.



- <sup>4</sup> Docket 771, Federal Trade Commission.
- <sup>5</sup> Docket 1204, Federal Trade Commission.
- <sup>6</sup> Docket 497, Federal Trade Commission.
- <sup>7</sup> Docket 1107, Federal Trade Commission.
- <sup>8</sup> Docket 1125, Federal Trade Commission.
- <sup>9</sup> Releases of September 16 and November 18, 1926, Federal Trade Commission.
- <sup>10</sup> Docket 1076, Federal Trade Commission. (In recent advertising, a part wool content is announced.)
- <sup>11</sup> Docket 1005, Federal Trade Commission.
- <sup>12</sup> Docket 473, 478, 477, 485, Federal Trade Commission.
- <sup>13</sup> Docket 1062, Federal Trade Commission.
- <sup>14</sup> Docket 883, Federal Trade Commission.
- <sup>15</sup> Docket 852, Federal Trade Commission, and Annual Report, Report, Federal Trade Commission, 1926.
- <sup>16</sup> Niemeyer, "Standards of Quality in the Jewelry Industry," 11th Annual Meeting of the U. S. Chamber of Commerce.
- <sup>17</sup> Report of the Seventeenth Annual Conference on Weights and Measures, 1924, Bureau of Standards Miscellaneous Publication No. 59.
- <sup>18</sup> Minutes of Meeting of National Committee on Metals Utilization, May 13, 1926, U. S. Department of Commerce.
- <sup>19</sup> "Farm Plumbing," U. S. Department of Agriculture, Farmers Bulletin 1426, 1924.
- <sup>20</sup> C. L. Patterson, in *Annual Meeting Bulletin*, American Zinc Institute, May-June, 1926.
- <sup>21</sup> News Release of Society of Automotive Engineers, September, 1926.
- <sup>22</sup> *Mechanical Engineering*, May, 1926.
- <sup>23</sup> Luckeish and Taylor, "How Much Does Light Fade Colored Goods?"; "Light," May, 1926.
- <sup>24</sup> Bulletin No. 3, Office of State Food Commissioner and Chemist, North Dakota, 1923.
- <sup>25</sup> "American Industry in War," Report of the War Industries Board, 1921.
- <sup>26</sup> Report of the Eighteenth Annual Conference on Weights and Measures, 1925, Bureau of Standards Miscellaneous Publication No. 70.
- <sup>27</sup> Docket 1221, Federal Trade Commission.
- <sup>28</sup> Hearings on H. R. 8305, March 4, 1926.
- <sup>29</sup> Weaver, Eiseman and Shawn, "A Method of Testing Gas Appliances to Determine Their Safety from Producing Carbon Monoxide," Bureau of Standards Tech. Paper 304.
- <sup>30</sup> Vernon Brumbaugh, "Causes of Some Accidents from Gas Appliances," Bureau of Standards Tech. Paper 303.

<sup>31</sup> *Electrical World*, April 15, 1922.

<sup>32</sup> *News Letter* 67, National Fire Protection Association.

---

## CHAPTER VII (Pages 121-144)

<sup>1</sup> *Journal of the American Medical Association*, May 24, 1919.

<sup>2</sup> "Nostrums and Quackery," Vol. I, American Medical Association Press, 385.

<sup>3</sup> *Ibid.*, 388.

<sup>4</sup> Cramp, Dr. Arthur J., "Truth in Advertising Patent Medicines," paper read before the Associated Advertising Clubs of the World, 1925.

<sup>5</sup> "Nostrums and Quackery," Vol. I, 470.

<sup>6</sup> *Ibid.*, 482.

<sup>7</sup> *Ibid.*, 491.

<sup>8</sup> *Ibid.*, 537.

<sup>9</sup> *Ibid.*, 579.

<sup>10</sup> *Ibid.*, 587.

<sup>11</sup> *Ibid.*, 76.

<sup>12</sup> *Ibid.*, 78.

<sup>13</sup> "Nostrums and Quackery," Vol. II, American Medical Association Press, 535.

<sup>14</sup> *Ibid.*, 492.

<sup>15</sup> "Nostrums and Quackery," Vol. I, 603.

<sup>16</sup> *Ibid.*, 644.

<sup>17</sup> *Ibid.*, 646.

<sup>18</sup> *Ibid.*, 647.

<sup>19</sup> *Ibid.*, 681.

<sup>20</sup> *Ibid.*, 684.

<sup>21</sup> *Ibid.*, 688.

---

## CHAPTER VIII (Pages 145-167)

<sup>1</sup> Beery, "Chemistry Applied to the Home and Community," Lippincott.

<sup>2</sup> Weller, "Patent Materials"; "Ethics of Fancy Names"; "Importance of Research Work", *London Times*, April 7, 1925.

<sup>3</sup> *Factory Mutual Record*, September, 1925.

<sup>4</sup> *Technical News Bulletin*, Bureau of Standards, October, 1925.

<sup>5</sup> "Manufacturer's Reflection on Service," *Society of Automotive Engineers' Journal*, December, 1925.

<sup>6</sup> A. L. Clayden, in a paper before the American Petroleum Institute, January, 1926.

<sup>7</sup> Automotive Research, *Society of Automotive Engineers' Journal*, May, 1926.

<sup>8</sup> Release of October 8, 1926, Federal Trade Commission.

<sup>9</sup> Docket 539, Federal Trade Commission.

<sup>10</sup> Report on the Fertilizer Industry, Federal Trade Commission, 1916-1922.

<sup>11</sup> Dinsmore, "Purchase Principles and Practice."

<sup>12</sup> Bouck, in *New York Sun*, October 30, 1926.

<sup>13</sup> Crolly, in *New York Sun*, November 6, 1926.

<sup>14</sup> Howard, Chief U. S. Bureau of Entomology, in *New York Times*, October 10, 1926.

<sup>15</sup> McIndoo and Sievers, "Plants Tested for or Reported to Possess Insecticidal Properties," Department of Agriculture Bulletin 1201, 1904.

<sup>16</sup> Report on Commercial Feeds, Federal Trade Commission, March, 1921.

<sup>17</sup> Schlunk, "Limitations of Branded Merchandise," *Journal of Retailing*, January, 1927.

---

## CHAPTER IX (Pages 168-182)

<sup>1</sup> News Release of American Engineering Standards Committee, June, 1924.

<sup>2</sup> Unpublished paper by P. G. Agnew, Secretary of the American Engineering Standards Committee.

<sup>3</sup> "Standardization of Electrical Equipment," *Power*, March 11, 1924.

<sup>4</sup> Bulletin 24, American Engineering Standards Committee, January, 1927.

<sup>5</sup> Unpublished suggestion of P. G. Agnew, Secretary, American Engineering Standards Committee.

<sup>6</sup> Mumford, *American Mercury*, January, 1927.

<sup>7</sup> Bulletin 57 of the American Exchange National Bank, June, 1922.

<sup>8</sup> Minutes of the American Engineering Standards Committee, December 9, 1926.

<sup>9</sup> Whitney, "The Place of Standardization in Modern Life," Inter-American High Commission, Government Printing Office, 1924.

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## CHAPTER X (Pages 183-196)

<sup>1</sup> "U. S. Government Master Specifications for Standard Weight Black Carbon Paper (for Typewriter Use)," Federal Specifications Board, No. 426.

<sup>2</sup> "Floors and Floor Coverings," U. S. Department of Agriculture, Farmers Bulletin 1219, 1924.

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## CHAPTER XI (Pages 197-217)

<sup>1</sup> "The National Bureau of Standards, Its Functions and Activities," Bureau of Standards Circular No. 1, 1925.

<sup>2</sup> Docket 1177, Federal Trade Commission.

<sup>3</sup> Bulletin 10, Office of the State Food Commissioner and Chemist, March, 1925.

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## CHAPTER XII (Pages 218-237)

<sup>1</sup> *Monthly Labor Review*, October, 1926.

<sup>2</sup> *Peking and Tientsin Times*, March 1, 1926; and *North China Star*, March 2, 1926.

<sup>3</sup> *Mechanical Engineering*, June, 1926.

<sup>4</sup> "Heat Transmission of Insulating Materials," Report of Insulating Committee, American Society of Refrigerating Engineers, 1922, revised to 1924.

<sup>5</sup> "Cosmetic Nostrums and Allied Preparations," Bureau of Investigation of the *Journal of the American Medical Association*.

<sup>6</sup> *Electrical Record*, October, 1925.

<sup>7</sup> "Truth in Fabrics and Merchandise Misbranding Bills," Hearings, 68th Congress, First Session, 1924.

<sup>8</sup> Dinsmore, "Reports on Commodities Submitted to the Institutional Buyer," issued by Edwards Brothers, Ann Arbor, Michigan. A series of 12 reports of which 4 have been issued to October, 1926.

<sup>9</sup> Gushee and Hirshfield, "Purchase with Inspection," paper before Association of Edison Illuminating Companies, 1924.

<sup>10</sup> *Light*, October, 1926, and News Release of General Electric Co., August, 1926.

<sup>11</sup> News Release of Society of Automotive Engineers, January, 1926; and *New York Sun*, January 8, 1927.

<sup>12</sup> "Belting, Transmission, Tools and Supplies," September, 1926.

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CHAPTER XIII (Pages 238-257)

<sup>1</sup> Beery, "Chemistry Applied to the Home and Community," Lippincott.

A comprehensive compilation of information on the technique of standardization and specifications and the work of the various agencies engaged therein has just been issued (April, 1927), by the Government Printing Office under the title *Standards Year Book, 1927* (Bureau of Standards Miscellaneous Publication 77, 400 pages, \$1.00).





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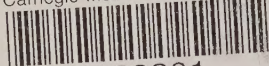


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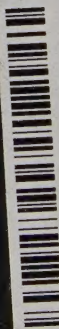


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